Scientific American.

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[For the Scientific American.]

Velocity of Wind.

Under the head of "Varieties of speed" in your paper of Oct. 13th, you say "clouds in a violent hurricane move from 80 to 110 miles per hour." You agree with what is stated in standard books, indeed, in nearly all writings on the subject of storm cloud velocities, but it is, nevertheless, an error. Neither hurricanes, tornadoes, nor common thunder-storms travel as fast as the wind current above them. I have sailed above them frequently,and always found the velocity of the wind greater than the storm beneath. The surest mode for an aeronaut to avert the roughness of a thunder storm or hurricane, is to rise above it; if he is far enough away from its center to avoid its centripetal force, then he will out-travel it; and as he goes higher so will he increase his speed over the storm cloud beneath. I have moved at the rate of a mile in 42 seconds in a stormless and cloudless atmosphere. In the midst of a tornado, having gone into it at its formation, the balloon was involved for 19 minutes, and landed but 5 1-2 miles from where the storm was encountered. In this storm it snowed, hailed, blowed, and rained, and whirled my vessel about to and fro, making me sick, and making me vomit more than a rough sea ever did. Hurricanes are moved along by the natural wind currents; and as they cause friction, they move slower than the wind that carries them along.

I will not attempt, in this article, to give my views on the nature of this friction, as I wish only to give my experience in regard to a common error that exists concerning the velocities of meteors of the cloud kind, that should be corrected, when positive facts prove the error. Out of nine voyages in the air above storms, I sailed each time faster than the storm below. In two cases out of the nine I gained time enough to descend before the storm overtook me; one in a distance of 40 miles, the other in a distance of 18 miles.

When the storm first forms, it moves much slower than the air current above it. After it is completely formed it moves comparatively faster. A storm when viewe from above and to the side of it, has a completeness of form that is hardly conjectured by those who never saw one thus. Hurricanes have no horizontal momentum *per se*, therefore they have no other horizontal velocity than what they derive from the trade-wind currents, and these are from the north-west and south-west in our latitude.

Lancaster, Oct., 1855. JOHN WISE.

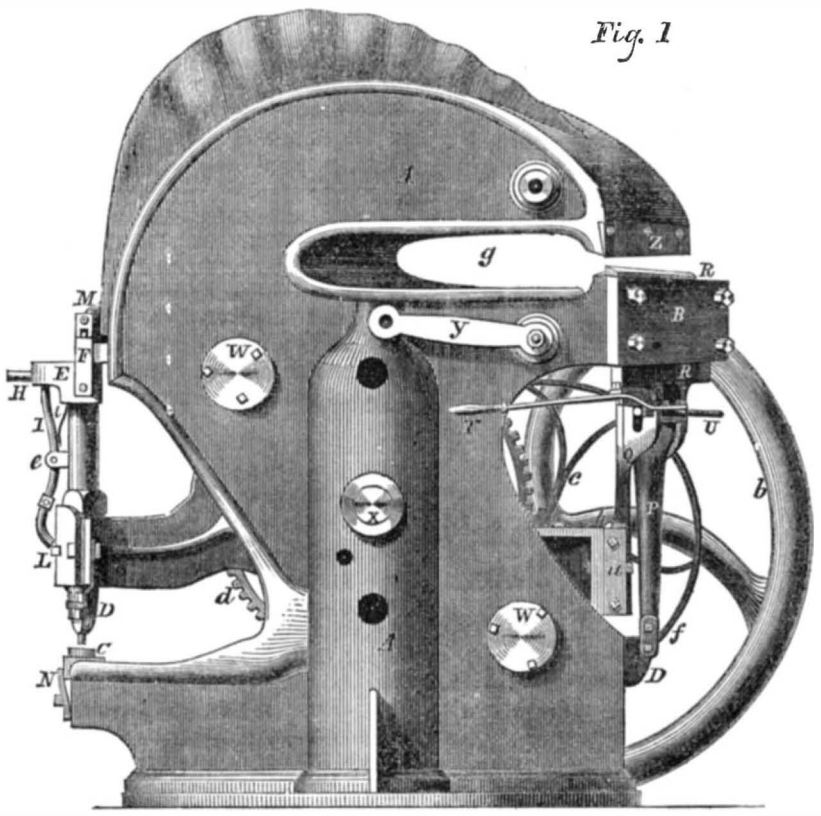
Coal of the Arctic Regions.

E. Merriam, of Brooklyn, has examined specimens of the coal obtained at the Haroe Islands by the U. S. Relief Expedition under Capt. Harstein, and from his description of it, we conclude that it is not coal at all. It loses weight in a warm room, and it contains crystals of naphtha—bright and clear like gum arabic. This coal, then, is a species of asphaltum.

No less than 108 Russians vessels of war have been destroyed in Sevastopol from first to last. What destruction of property.

IMPROVEMENTS IN PUNCHING AND SHEARING MACHINES.

Fig. 1

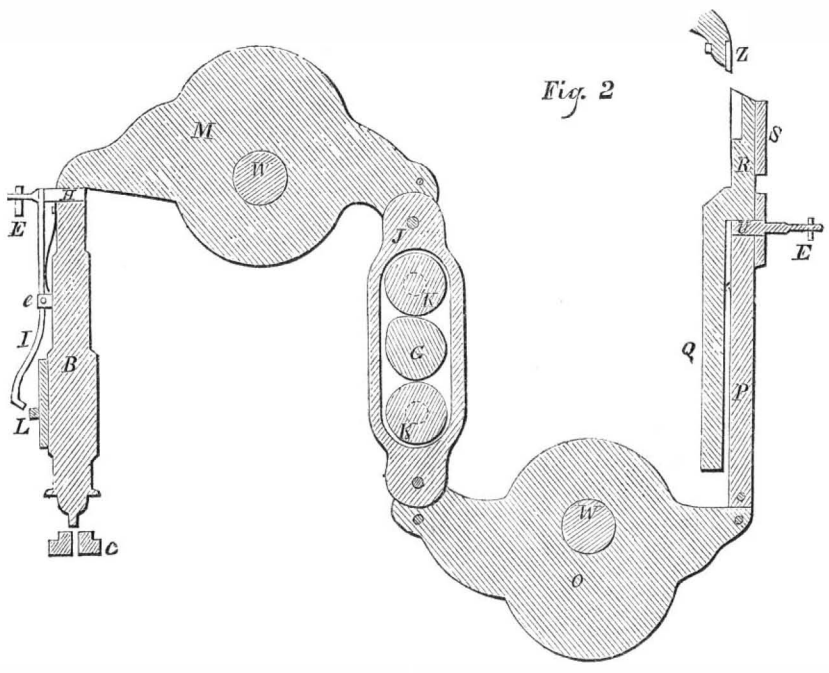


The accompanying engravings represent an improvement in machines for punching and shearing metals, for which a patent was granted to Ozias J. Davie, and Thos. W. Stephens, of the city of Erie, Pa., on the 4th of October, 1853, on which improvements have been made since that time, and are here represented.

Fig. 1 is a side elevation, and fig. 2 a transverse vertical section of the working parts.—Similar letters refer to like parts.

A is the frame of the machine; Z is the upper shear bolted to the frame; R is the lower shear. P is the rod which moves the lower shear. Q is the casting, to which the lower shear is fastened, and which moves between gibs in the way piece, *a*. U and H are slides which complete the connection between the punch and shear and levers. E E are guides for the slides. T is a lever to operate slide U. O is the lever which works the shear, and is connected with the yoke, J, in which are the friction rollers, K K (the bearings of which are dotted,) between which is the cam, G, fig. 2. The opposite end of yoke J, is connected with

Fig. 2



the lever, M, which operates the punch, B. F is a strap from punch B to lever M. W W are bearings of levers. I is a small hand lever on pivot *e*, to throw slide, H, between the punch and lever. D is a shield for the punch point. C is the die, held in its place by plate N. *l l* are springs to throw back the hand levers.—*b c d* are necessary gearing and fly wheels for giving motion to the machine.

OPERATION—The rotary motion given to the cam, G, forces the yoke, J, and with it the vibrating levers, O and M, alternately up and down. The slide, U, being moved between the rod, P, and the iron piece, Q, the shear is forced up by lever O, cutting whatever is between Z and R. The slide, U, being withdrawn, the shear is not moved up by the next upward motion, but drops, and is prevented from falling too low by lugs cast on the back of Q, coming in contact with the top of casing, *a*. Th slide, H, is moved between B and M, and ope ates in the same way as U; on the slide, being withdrawn, the punch, B, is prevented from falling too low by the lower end of the hand lever, I, resting on the lug, L. The opening, *g'*, is long enough to allow the largest siz boiler iron to be slit through the middle; to prevent the straining spring of the jaws when cutting heavy bars, the yokes, Y, are put on, but they are removable at pleasure.

One of these machines is on exhibition at the Fair of the American Institute in the Crystal Palace, where its operations attract great attention. The advantages claimed for it are, first, its compactness, a punch and shear being in the same machine, and driven by the same shaft, and yet so arranged that workmen may be engaged at both at the same time without interfering with one another. Second, the punch or shear is disconnected, and again connected without any shock or stopping the machine. Third, great power, smoothness of operation obtained with little friction, by the use of the cam, friction rollers, and yokes. It is one of the best inventions of the kind with which we are acquainted.

Further information as to price, &c., can be had by addressing Messrs. Liddel, Kepler, & Co., Erie, Pa.

Oil and Fuel on Railroads.

We have received the report of D. C. McCallum, Esq., Superintendent of the New York and Erie Railroad, containing a statement of the miles run, the quantity and cost of fuel and oil used, and the labor performed by each engine during the month of August last. The plan which has been adopted on the New York and Erie, and the New York Central Railroad of preparing monthly tables of running expenses, for the information of employees, is bringing forth good results. A great saving has been effected already, simply by increased carefulness and attention. In the month of May last, on the New York and Erie Railroad, the number of miles run to one pint of oil was 14·62; the cost for repairs of engines was 6,70 per mile. In August, the miles run to one pint of oil were 16·45; the cost for repairs of engines was 5,19. Thus with an increase of 1·83 miles run to a pint of oil, there was a decrease 1·51 per mile for repairs. These results were not obtained by a decrease in the total work done on the road, which would have lett more time for supervision; this saving was effected, and an increased amount of work done on the road at the same time. In May, there were 250,443 miles run; in August, 259,590—an increase of 9·147 miles run. So much for the saving effected in oil and repairs of engines. With regard to the use of fuel—wood—it appears to us that the minimum of saving has been reached. In the month of July, 31·38 miles were run with one cord of wood; in August, 30·77. The price of wood differs greatly on the different divisions of this road. thus, the price per cord on the most eastern division is $5,73, while on the western division it is only $2,33. One engineer, J. F. Olmstead, run 52 miles to a pint of oil—this is the highest number. The engineer who has run his trains with the least cost per mile is H. H. Brooks. On this railroad the passenger trains run more miles to one pint of oil than the freight trains. The reverse is the rule on the Central New York Railroad. The monthly reports of the New York and Erie Railroad are very full; they exhibit a close and careful supervision of every branch.

The London *Athenæum* contains an account of the rumored recent discovery of a large sea in Africa, which occupies the vast space between the Equator and lat. 10 south, and between lon. 23 and 30 east—or about 7000 miles long and 450 broad, and therefore twice as large as the Black Sea. It is not stated whether it is a fresh or salt sea.

In Paris, apothecaries are obliged to put up all poisons in red paper, while white labels must be used for medicine intended for internal application. The French have good ideas.

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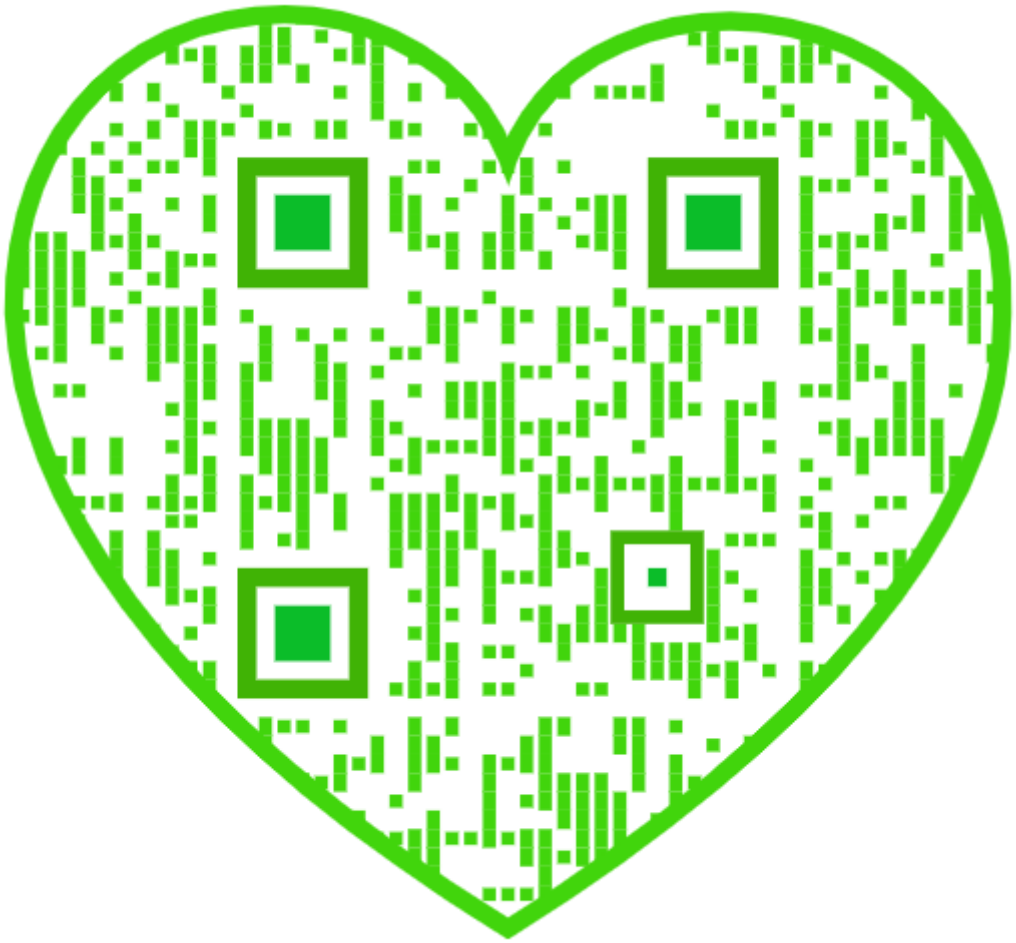

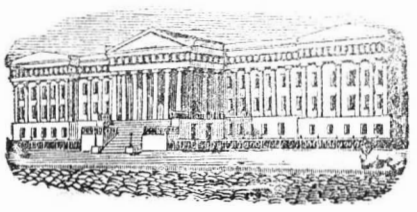

[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING OCT. 30, 1855.

RICE HULLING MACHINES—Robt. Anderson, of Brooklyn, N. Y., and J. E. Anderson, of New York City: We are aware that india rubber has been applied in hulling machines, and that segmental concaves, supported by spiral springs, are well known in this class of machines; also, that it is common to apply adjusting screws to the concave, when constructed in one piece; we do not claim either of these features.

But we claim the adjustable, segmental concave, faced with india rubber, in combination with the spiral springs, and a ratchet faced hulling cylinder, in the manner described for the purpose specified.

MANUFACTURING CORKS—Wm. R. Crocker, of Norwich, Conn.: I claim the application of the revolving cylindrical cutters, to cut corks from a block or slab, as described, whether the cutters are slit, or cut tapering or conical or unslit, to cut cylindrical corks.

I do not claim a cylindrical cutter; but this mode of construction, use, and application, allowing myself the privilege of arranging the same, in detail, while the principle and distinguishing characteristics are retained.

GAUGING AND SETTING SAW MILL DOGS—Luther B. Fisher, of Coldwater, Mich.: Making no claim to ratchet, pawl, and lever, for giving the feed, I claim the spring bar, h, in combinatton with the ratchet rim, m, and lever stud, n, constructed, arranged, and operating, substantially as and for the purposes specified.

HANGING MULLEY SAWS—I. N. Forrester, of Centerville, Va.: I claim the manner or mode of hanging saw blades, by forming thereon, or attaching to the front edge only, of one or both ends, devices, which I terms saws, or guide flanges, n n, fig. 2, and the working or applying the same in grooves or guide places, g g, whereby the back edge and principal part of the saw blade is free and unrestrained, and without any rigidity or stiffness other than that of the blade itself, substantially as set forth and for the purpose specified.

COOKING RANGES AND AIR HEATERS—Julius Fink, of Philadelphia, Pa.: I claim the arrangement of the dust box, T, and exit flue, U, leading from the passages surrounding the oven, within the air-heating chamber, substantially as described and for the purpose specified.

I also claim, in combination with a hot air chamber, which is heated by conduction, and independent of the heated or burning gases which pass around the oven, the carrying of said gases back and up through a flue, located in said hot air chamber, for the purpose of re-heating the gases, and causing them to ascend more rapidly, by their rarefaction, substantially as described.

STRAW CUTTERS—Luther B. Fisher, of Coldwater, Mich.: I claim ear, k, in combination with angular groove, g, pieces, n n, and rock shaft, p.

MACHINERY FOR BRAIDING—Liveras Hull, of Charlestown, Mass.: I do not claim combining with the racer and its bobbin machinery for taking up the slack of the thread and causing the bobbin to give out or deliver thread as the same may be necessary.

But I claim arranging and applying a rotary spring pulley and a tripping steed or its equivalent, and tubular guide journal, with respect to the bobbin and its spring pawl, and so as to operate therewith, substantially as specified.

NUT MACHINE—Robt. Griffiths, Alleghany City, Pa.: I claim the tables, n n, with the boxes and punchers, whether connected together or not, arranged and operating as described.

SURFACE CONDENSERS FOR STEAM ENGINES—Peter Hogg, of New York City I claim the arrangement of two or more corner worms of pipes within a surrounding vessel, when the several coils are in succession coiled of a smaller diameter, and placed one within the other, and each separately attached at top and bottom, in the manner essentially as and for the purpose specified.

I also claim causing the condensing water which enters the surrounding vessel, to travel around in the said vessel, for the purpose specified, and by means described, or any equivalent therefor, as set forth.

LOCKS—R. G. Holmes. and W. H. Butler, of New York City: We claim, first, arranging the spindle or arbor, E, of the lock in such a relation with the bolt that the bolt may be operated by drawing and pressing the spindle or arbor in a direction transversely with the casing of the lock, substantially as described.

Second, We claim the cylindrical bolt, B, constructed and arranged substantially as shown, and also connecting said bolt to the spindle or arbor, E, by means of the lever, C, as described.

Third, We claim the employment or use of the sector tumblers, K, when attached to a sliding plate, J, and used in connection with a spring, L, which is acted upon by the bended or inclined projection, n, at the side of the bar or casing, I, for the purpose of preventing the lock being picked by obtaining a knowledge of the position of the slots, l, in the tumblers, by pressing the tumblers singly against the plate, K', as described.

[The above lock is on exhibition at the Crystal Palace. A full description of it will be found in our report of the Fair, on another page.]

LAMPS—Jno. Stuber & Thos. Hardin, o Utica, N. Y.: We claim the use of tube, H, connecting the drip cup, G, with the reservoir, A, in the manner described, for the purpose specified.

Also the arrangement of tubes, C C, in combination with the rod, D, in the manner described, for the purpose specified.

LOOMS—James O. Leach, of Ballston, N. Y.: I claim, first, the combination and arrangement of the shifting lever, N, connecting rod, P, and ecceniric, B, operated by the gearing, T and S, or their mechanical equivalents, substantially in the manner described, for the purpose of varying the movement of the loom harness or heddles, so as to produce solid or tubular fabric with the same warp, and vary the solid or tubular weaving, so as to produce bags of any desirable capacity.

The mechanism substantially as described for determining and regulating the intervals between the shaft of the cams, viz.: stops on the shaft of the eccentric, governed by a stop lever being operated by a horizontal cam, which is itself turned by a ratchet wheel whose pawl is driven by the oscillating motion of the lathe, in combination with the partially toothed bevel wheel.

VENTILATING RAILROAD CARS—H. L. B. Lewis, of Philadelphia, Pa.: I do not claim the use of a ventilating box or case like that of Nelson Goodyear, nor do I claim the use of one or more sheets of wire gauze or screens through which to pass the air, so as to preclude the entrance of sparks and dust, as these have been used before.

But I claim the peculiar construction and arrangement of the ventilating box or case, as described and set forth.

I claim a reciprocating curved deflector, A, adapted to be moved only horizontally to right or left, for directing currents of air into the car, in the specific manner set forth and described.

SUGAR FILTERERS—Charles E. Bertrand, of New York City: I claim the combination of a series or system of three or more filters with the described and specified arrangement of steam, water, and saccharine juice pipes, and their appurtenances, admitting of a continuous circulating motion of the liquid to be filtered, from one filter into any of the others until a clear and fair filtration is obtained; and also admitting of the working of the filters backward and forward at pleasure, either from the top to the bottom, or in the opposite direction, for the purpose of partially reviving the purifying properties of the charcoal until fully exhausted, as set forth.

RING AND TRAVELER SPINNING FRAMES—Henry Luther, of Providence, R. I.: I claim combining with the twisting mechanism, and the delivering rollers, or mechanism of a ring, and traveler spinning frame mechanism, a mechanism substantially as described, which, while the cop or bobbin increases in size, shall so increase the rotary movements of the spindles, and the delivering rollers as to maintain uniformity in the twist and strain of the yarn as specified.

SEWING MACHINES—L. W. Langdon, of Rochester, N. Y.: First, I claim making a stitch by tying a half knot or a whole knot, at the will of the operator, in the manner set forth and described.

Second, I claim the snail worm on the revolving vertical face plate for the purpose of holding the thread until the knot is tied, and the casting it off in time for the stitch to be drawn up.

Third, I further claim the vertical face plate into which the shuttle is set for the purpose of carrying it around, and the re-action of the looper, K, for quickening the motion of the shuttle as it passes the needle, for the purpose of letting the looper pass out freely.

Fourth, I do not claim broadly, feeding the cloth by the motion of the needle.

But I do claim feeding the material by the needle, when combined and arranged with the lateral motion of the needle in the manner described, that is to say, in connection with the rock shaft, H, with the sliding step in the end, the connecting rod of the spring, S, the setscrew and rollers, B B, the cams, J J, the sliding bar, P, and the adjustable lever, o, as set forth.

STOVES—Wm. Mootry, of New York City: I expressly disclaim any metallic packing that does not contemplate regular cellular tissues. I especially disclaim the use of spiral metallic scraps.

I claim the application and employment of iron work or other regular metallic cellular interstices combined with stoves, furnaces, and other heating and cooking apparatus, or such heated surfaces generally, when used in the manner substantially and for the uses and purposes before mentioned.

LAMPS FOR BURNING VOLATILE LIQUIDS—E. N. Horsford, of Cambridge. Mass., and James R. Nicholas, of Haverhill, Mass.: We do not claim the use of perforated metal or of wire gauze as a means of protection in these lamps.

But we claim, first, the combination of the safety wick tube, constructed as described, with the safety tube or casing around it.

Second, the combination with the safety tube, or casing, the perforated safety chamber, with its tube barbed at the top, to contain and hold the wick in place.

Third, making the wick tube in two parts or divisions, separable or not, substantially as set forth, so as to form the safety chamber, in which the barbed portion of the lower wick tube terminates.

CORN AND COB MILLS—Geo. Patten, of Washington, D. C.: I claim the double surfaced breaker and crusher, D, between the upper portions of shell and burr, in combination with a shell, A, and burr, B, constructed, arranged, and operating substantially as, and for the purposes specified.

SPOKE AND AXE HELVE MACHINE—Owen Redmond, of Rochester, N. Y.: I claim, first, the partially revolving bed, C, constructed, arranged, and operating substantially as described, so as to submit different pieces of wood to the action of the cutters at its forward and backward movements, substantially in the manner set forth.

Second, the bed, Y Z, having a laterally swinging spring plate, X', in combination with the adjustable guide, m, for submitting curved timber to the action of rotary cutters, in direction of its curve, substantially as specified.

Third, the curved bed, X, traversing with an undulating movement, for submitting curved timber to the action of rotary cutters, as set forth.

VENTILATING RAILROAD CARS—J. K. Taylor, of Binghamton, N. Y.: I do not claim, separately, forcing air through water before it enters the cars, in order to purify it, or cleanse it from dust, cinders, etc., for this has been done in various ways.

But I claim the vertical slotted tubes, c, placed at the outer sides of the windows, H, of the car, and having air forced through them by means described, or in any other manner, for the purpose specified.

[In this method of ventilating cars the air is first caused to pass through water, which arrests the dust and cinders, and then into the interior of the apartment. The dust is prevented from entering at the windows, when they are open, by means of an outside grating, the bars of which are hollow, with a slit through their whole length. Air is forced into the bars, and escapes through the slits, the latter being arranged so as to discharge the air at an angle; a film of moving air thus covers each window completely and prevents the ingress of any dust, while the foul air from the car joins the currents from the tubes and makes its exit. This is a novel invention, and it is said, cheap of application.]

BEDSTEAD FASTENINGS—John W. Yothers, of Spruce Grove, Pa.: I claim, in connection with the screw rollers or tenons on the ends of the rails, the combination of the tubular segmental nuts, G, and the buttons, H, with each other, and with the posts, B, in such a manner that by turning the said buttons the rails, A, can be secured with their knobs in any desired position, and by the act of thus securing the rails, the buttons themselves will be drawn so closely against the outer surfaces of the posts as to make perfectly tight and insect-proof joints between the buttons and the posts, substantially as set forth.

FEEDING PAPER TO PRINTING PRESSES—Henry W. Dickinson, of Rochester, N. Y., assignor to Lansing B. Swan, of same place: I claim the general arrangement of the devices described, and for the purpose set forth.

BURGLARS ALARM—Daniel E. Eaton, of Boston, Mass., assignor to himself and Perley O. Eaton, of same place: I do not claim the combination of a lamp and an alarm apparatus, a match holder and an igniting surface; nor employing therewith a contrivance for casting the extinguisher off the lamp.

But I claim arranging both the igniting sector, G, and escapement hammer, H, on one rotary shaft, (controlled by a spring, as set forth,) in combination with so arranging the wick tube, c, the match holder, C, and the escapement rod, I, that immediately after the trigger bolt, N, has been withdrawn from the escapement hammer, not only shall such hammer be thrown over upon the top of the escapement rod, but the igniting sector be caused to discharge the extinguisher off the wick tube as described.

GAS BRACKETS—John R. Hunter, of Baltimore, Md., assignor to Samuel R. Blair, of Philadelphia, Pa.: I claim the use of the parallel arms or tubes in combination with the revolving joints, in the manner substantially above described, so as to make the bracket or fixture self-sustaining, in any position or elevation, and at the same time maintaining the burner in its level position, so as not to disturb a glass or shade.

ROOFING COMPOSITIONS—James West, of Syracuse, N. Y.: I claim the use of lime in combination with the rubber, gutta percha, and shellac solutions in the composition, as set forth, for the purpose specified.

LATH MACHINE—Aretus A. Wilder, of Detroit, Mich.: What I claim in re-sawing and bringing plank to an equal width at the same time is the flanged brad rollers, d d, with their springs or equivalents, in combination with the adjustable back rest, for the purposes before described.

CIDER OR WINE MILLS—Samuel Krauser, of Reading, Pa.: I claim, first, communicating a reciprocating, as well as a rotary motion to the grinding disk, in the manner and for the purposes described.

Second, the use of the grinding disk, with its peculiar movements, in combination with the two stationary sieves, as described and set forth.

Third, the use of the stationary sieves, for the purpose of pressing the whole or a part of the pumace through their meshes, and also causing them to assist in reducing the fruit to a pumace, by providing their inner surfaces with sharp projections, as described and set forth.

Fourth, the arrangement of the skeleton concave, W, with reference to sieves, in the manner, and for the purpose as described.

Fifth, in combination with operating the screw, by means of two vibrating tumblers, as described, the use of the catches, m m, in the manner and for the purpose described.

Sixth, in combination with the side screens the application of the scraping wheels, in the manner and for the purpose set forth.

CUTTING DOUBLE TENONS—C. P. S. Wardwell, of Lake Village, N. H.: I claim the combination and arrangement, substantially as shown and described, of the intermediate obliquely set or drunken saw, F, with the clearing or finishing true circular saw, M, for operation together in the manner specified, and whereby the drunken saw, F, not only serves to largely reduce the wood between the tenons as required, for the completion of the tenons, but to form a wide kerf or pathway for the axle, L, of the finishing saw, M, to admit of the deep insertion of the latter into the wood and of its operation as a clearer between the double tenons during the continuous progress or feed of the timber, as described.

[The above excellent invention is now on exhibition at the Crystal Palace Fair, in this city. For a description see report in another column.]

DESIGNS.

STOVE PLATES—Calvin Fulton, of Rochester, N. Y., assignor to Samuel McClure, of Rochester, N. Y., and Bedell & Barry, of Albion.

COAL STOVES—James Horton, of Philadelphia, Pa., assignor to Leibrandt McDowell & Co., of same place.

STOVES—Andrew O'Neill, of Portsmouth, O., assignor to O'Neill & Hunter, of same place.

COOKING STOVES—Ezra Ripley & N. S. Vedder, of Troy, N. Y., assignors to Johnson, Cox, Lasley & Co., of New York City.

Remonstrance Against the Woodworth Patent.

We publish the following remonstrance for the purpose of enabling those who are interested in the matter to get it printed in petition form, or to form the basis of their petitions for extensive circulation in their respective districts to be presented to the next Congress:

To the Senate and House of Representatives of the United States.

We, the undersigned citizens of the United States, having learned that efforts will be made and petitions presented to the present Congress for another extension of the patent of William Woodworth, deceased, for improvements in Planing Machinery, granted originally in 1828, respectfully solicit your honorable body to reject such applications for the following reasons:

The patent of Wm. Woodworth has already been twice extended, once under the general laws, and once by an especial Act of Congress, and will expire in 1856. It has now been in existence longer than any other patent ever issued, and twice the length of time enjoyed by the vast majority of patentees. The long duration of this patent, and the unjust manner in which it has been used, has raised it into a monopoly that has operated, and now operates, injuriously upon the interests of our country, and the rights of many honest inventors, by repressing their improvements. The established term of a patent—14 years—allows time for the introduction of the improvement and the remuneration of the inventor; this is the object of the Patent Law. But when a patent grows up into a huge monopoly, in which the original patentee—the inventor—has no interest, the assignees or owners of it naturally exert their influence and power to keep down competition, and prevent the introduction of any new improvement that, in their opinion, would have a tendency to injure them in a business point of view. This has been the case with the assignees of the Woodworth patent. The inventor—William Woodworth—was dead before the extension of his patent by Congress in 1845; the extension was granted for the benefit of his heirs, to his son and administrator, who conveyed the grant to other parties, for value received, a few days after it was obtained, consequently the patent has been, and is now in the hands of parties who have done nothing towards benefitting the country in any way by inventions of their own. These parties, armed with the legal weight of the extended patent, have used their means and powers to keep down competition in their business, by endeavoring to prevent the introduction and use of other and different machines from that of Woodworth. They have claimed that *pressure* on the boards while being planed was part of Woodworth's invention, hence they have instituted suits against parties who have used this old method of holding the planks to the action of the cutters, merely for the purpose of stopping them from pursuing the same business. By the aid of this patent, backed up by the great amount of wealth at their disposal, they have intimidated many persons who dared to use planing machines, even when these were entirely different from that of Woodworth's. Many men of small means, rather than involve themselves in expensive and endless lawsuits, which they are unable to bear, with the owners of the patent, have been deterred from using other machines, and have thus submitted to wrong from necessity. The owners of the Woodworth patent—according to the report of Mr. Cartter, the Chairman of the House of Representatives in 1852, receive about $3,000,000 of profitable tribute annually, hence they have been enabled to expend vast sums to maintain their monopoly, to the great injury of many honest and worthy men, who were destitute of the means necessary to defend their rights in expensive litigation. Such acts of intolerance have been the more bitter and unjust because, it is believed, they have been committed under a patent obtained in a suspicious manner, that it is not the same as the original patent, and that it claims arrangements of mechanism never invented nor claimed by the deceased William Woodworth.

A few months after the original patent of 1828 was extended by special Act of Congress, in 1845, and although it had been in existence for seventeen years without alteration—while the inventor was living—it was hastily surrendered, amended, and re-issued, while the Commissioner of Patents was temporarily absent from Washington, and as re-issued it embraces claims never set up by Wm. Woodworth himself. This was an act of a very reprehensible character, and Congress, instead of extending such a patent, on this very account should rather pass an act declaring it null and void.

The heirs of Wm. Woodworth having by bargain received full compensation for the extended patent, have received all the benefits contemplated for their relief by Congress. It would, therefore, be unjust to grant another extension of the patent, the more especially as the heirs of Woodworth assigned the extended patent to parties who have used it so oppressively.

We could urge no objections against a full remuneration to the inventor, but he is beyond the reach of earthly reward. Those who have enjoyed the benefits of this patent, arising from tribute on the use of the Woodworth Planing Machines, and who would have the benefits of a re-extension, have no more moral right to the exclusive monopoly of such machines than any private citizens of our country. To grant a re-extension of the patent would be an act as despotic and odious as one to allow a few private parties the legal power to levy a tax on *any article* of manufacture for their own particular benefit. It has been asserted that the assignees of the patent have expended large sums of money which have never been returned to them, in defending their rights from infringement. This is not correct. It is well known they have expended large sums of money, and their great incomes have enabled them to do this; but most of these sums were expended, not in defending the patent, but in buying off opposition and intimidating competition. The large sums which they have thus used, have done injury to our country, and affords a strong reason for rejecting every application to re-extend this patent.

California State Fair.

The Californians are a great people. They do not seem to be content with possessing a greater amount of golden prospects than any other State, but must also strive to excel all others in agricultural products. They held a State Fair in the Assembly Chamber at the Capitol, Sacramento, in September last, and the accounts given in the Sacramento *Union* of the products there displayed, make our teeth water for some of their delicious eatables.—There were the finest grapes, in every variety; oranges six inches in diameter, and Newtown pippins five inches in diameter. Onions twenty inches in circumference, parsnips two feet long, tomatoes twelve inches round; beets weighing each twenty pounds, potatoes five pounds each, and pumpkins four feet in circumference.—These are some of their triumphs in agriculture, which we look upon as the chief of the fine arts, not excepting gold digging.

A Valuable Gift.

The public library at Boston has received from B. Woodcroft, Esq., superintendent of specifications, &c., in the Patent Office at London, a set of publications amounting to nearly two hundred volumes, imperial octavo.

Two other asteroids were discovered last month by European astronomers. The number of these small planets have increased so rapidly within the past five years, that astronomers are becoming puzzled for names to give them.

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[For the Scientific American.]

Hints to Inventors.

There is a restless spirit in man which is the germ of intellectual progress, whether the ends to which it is directed be for good or evil; and yet, though in this whirling world of ours naught stands still, there are, as in the vegetable world, periods at which the germination of man's higher nature assumes the torpid state, and its progress seems particularized by fits and starts, which give an alternate life-and-death character to the effort: nor are these pauses and movements equal.

Science, from its earliest dawn to its present development, emphatically responds to the truth of this. We live now in an age of crude mechanical skill, or one in which thinking man shares alike laborious toils with the unthinking world of animal life he was made the lord and master of. And, anon, we breathe an atmosphere of scientific attainments which, in looking down the dark vista of the past, gives a new life or character to our being, and urges on us, everywhere, to soar yet higher in the field of intellect, and to laugh but faintly at those lofty aspirations in which genius is prone to revel. But again comes another period of quiescence, continuance in the one order or system of things, silent maturation; and the world grows bold, and laughs aloud at the unprofitable dreams and mad impracticabilities of schemeing visionaries, inventing impostors, (!) till another meteor, flashing o'er our path, hushes the wise world into admiring silence; leads it to doubt, believe, find realized, and again to hope—for a time.

Here, a Guttenburg and Faust, imprinting on time, as it rolls, in transferable and legible characters, the immortality of thought. There, a Watt, with his mathematically arranged devices for rendering perfect the union of two opposing elements; and of that union establishing a giant in strength with a child's docility; and again, but slightly turning the ever-changing kaleidoscope, we see a Trevithick and a Vivian steaming their way o'er the iron-ruled earth; a Fulton, setting at defiance the angry winds and despotic rule of Neptune; a Morse electrifying the world by making the lightning submissive to the immediate and mutual enjoyment of far distant and widely separated ideas; and a host of others, all flashing prominently on the wide arena of science, and appearing as suns in the midst of stars—those smaller links in the great chain of our progress, satellites of a planetary system, as it were—to illumine the intervening darknesses that cloud the experimental, improving, or silent filling up part of the glorious conflict which mind—ever antagonistic—wages with matter, till all things material are made the perfect slaves of human will and reason.

But how comes it that principles, or applications of principles well known, burst, apparently, so fitfully upon us, and but here and there, in the great race of time, we succeed in snatching hold of what is constantly passing before and around us? The principles are always there, obedient to the same laws, equally clear; but the importance or necessity of their application fails as yet to cry aloud! Truly, "necessity is the mother of invention." But why delay till this necessity is forced upon us? Master minds are indigenous to every age, it only wants the occasion to call them out; yet this occasion ever exists. The same inventive genius that characterized Watt was capable, almost without effort, to perform the work of Fulton; still a long silent interval must needs elapse. And so it is with a host of the many improvements in our present day, which a future sun will reveal in so clear a light as to make us feel the pangs of self-reproach for the sloth we have been guilty of. It is false to say there is now no room for further improvement. There is more than there ever was. Invention but begets invention, as man begets man, or population increases; time as it rolls, plows up new resources, new channels for the exercise of inventive genius. Science is inexhaustible, and each new discovery made forms but a useful instrument for establishing another, and helps to render more easy the task of doing so.

Are not these delays almost exclusively attributable to errors of our own, some weak failing we care or strive not to see and master? How many of the inventors of our country, acknowledging the truth that "knowledge is power," continue to work on in the dark, disregardful of the fact? "How much useful knowledge" says Buffon, "is lost by the scattered forms in which it is ushered to the world! How many solitary students spend half their lives in making discoveries which had been perfected a century before their time, for want of a condensed exhibition of what is known!" This want no longer exists, as witness the numerous encyclopedias and other literary productions of like character the press has presented to the world, and prominently conspicuous among which stands the SCIENTIFC AMERICAN—that tell-tale of science, as it goes. Too much has now been done to proceed by guess-work to success; the time has gone by for valuable invention framed in ignorance of the past; we must now read and learn. But while knowledge is power, and in getting it we acquire the ability to achieve, let us not be forgetful of our honorable obligations to others in the use of it. This we must observe if desiring success. How many are there who seem to aim at nothing more than pirating, under a mere difference of color, the ideas of their neighbor? Half the labor thus prostituted would eke out for itself, in an independent course or channel, a far nobler and greater result. Man is naturally an imitative animal, and it is difficult to shake off, or reduce to a fair working standard, the impressions we have borrowed; nevertheless, to succeed, we "must deviate from the beaten path," using the knowledge we have acquired not in its abstract form, but in its general character or weight. Again, and not only where knowledge is not, but also where it is to be found, what strenuous efforts do we see some inventors make to obtain a given result by means which are opposed to the fundamental rules of science; "forgetful," says an able writer, in speaking of an attempt to create power, "that the laws of nature are immutable, and that although the motive power inherent in the elements can be applied in various ways, or transferred, the sources from whence it is derived are the same in all cases, and subject to the laws of the old mechanical axiom, 'What we gain in power we lose in time.'"

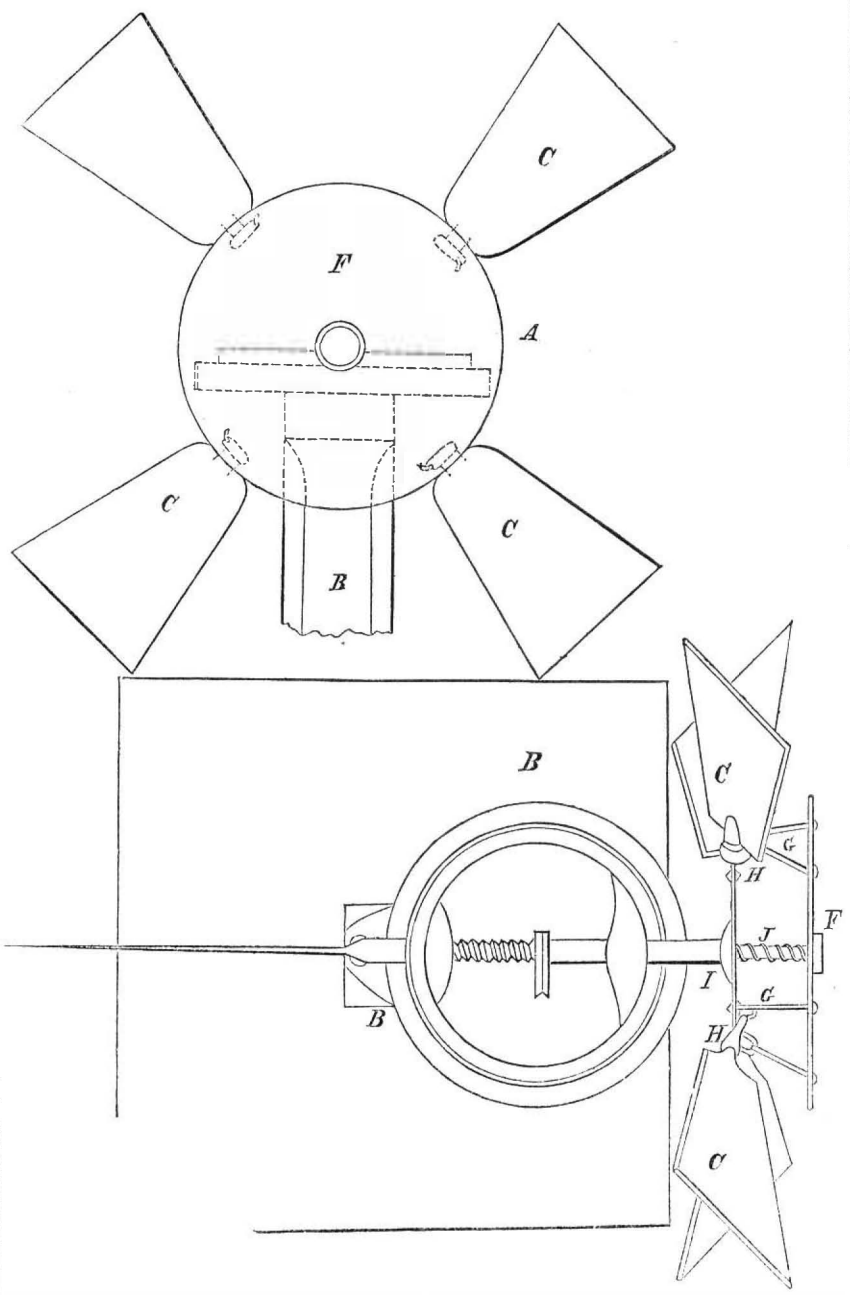
It is obvious, then, that much of the delay, which characterizes science, is due exclusively to ourselves, to our wrong doings, our short doings, or our over doings, rather than to the difficulty of the work to be done or our inability to do it. We all know the story of Columbus and the egg, but hear also Milton:—

"Th' invention all admired, and each how he
To be th' inventor missed; so easy it seemed
Once found, which yet unfound, most would have thought
Impossible."

Yes, numerous as have been our discoveries in the starry firmament above, there are countless myriads of those sparkling gems yet untold; and so it is with our terrestrial discoveries—we know it and feel it, but neglect it.

AGATHODEMON.

SELF-REGULATING WINDMILL.



On the 17th of July last a patent was granted to Joseph Dickinson and Oliver White, of Richmond, Wayne Co., Ind., for an improvement in Selt-Regulating Windmills, illustrated in the accompanying engravings, fig. 1 being a front elevation, with the standard partly removed; and fig. 2 a top view. The nature of the invention consists in having a face plate connected with rods, cranks, and a spring, to the vanes of the windmill, in such a manner that the action of the wind upon the said plate will change the angle of the sails, according to the force of the wind. This windmill is designed for pumping water on farms, and for other purposes, and is to be self-regulating, requiring no attention, however variable the wind may be.

A is the wind wheel, which is arranged and adjusted with the stationary frame, B, so as to rotate on vertical and horizontal axes in the usual manner. *c* are the vanes which radiate from the shaft, I, in the usual manner. The invention consists in applying to them an arrangement by which their angle to the plane of the periphery of the wheel in which they are adjusted will be regulated and governed by the force of the wind, producing a steady and uniform speed of the machinery without attention, or by the force of the wind alone. F is a face plate or circular disk of the required area—about half that of the diameter of the whole wheel. This plate is placed vertically, or at right angles to the main shaft, I, so as to receive the full force of the wind; and it is connected with the shanks of the vanes, c, by rods, G, and cranks, H, or analogous contrivances, and provided with a counterbalancing power, viz., a spring, J, (which is proportioned in size or power to that of the wheel plate, and speed at which the machinery is desired to run) all of which are so arranged as that the wind upon the said face plate or disk will operate or serve as a regulator or governor of the speed of the machinery, and prevent the wind in its fury from injuring the machinery, and its variable force from varying the speed of the same.

The face plate or disk, F, must be proportioned to the size of the wheel, and the spring to them both, so that a given speed of the machinery will be obtained, which can be easily determined by practice. When properly adjusted in this manner, the machinery will govern itself and maintain the uniform speed in stormy weather with variable winds, and under circumstances where common mills would require careful attention. The full force of the wind acting upon the face plate or disk, and it acting upon the vanes, changing their angle with the plane of the periphery of the wheel; if the wind should blow in squalls, the vanes will be constantly varied in their angle, causing the same amount of force from the wind to act upon them; and if the wind should be too powerful, the vanes will be brought parallel with the main shaft, or in that position in which the wind will have no power to propel the wheel, and the machinery will stop of itself. This method of self-regulating the position of the vanes is exceedingly simple and easily constructed.

More information respecting it may be obtained by letter addressed to Messrs. Dickinson & White, at Richmond, Ind.

How to Break up a Cold.

Dr. Hall, in his *Medical Journal*, gives the following directions for breaking up a cold: "A bad cold, like measles and mumps, or other similar ailments, will run its course about ten days, in spite of what may be done for it, unless remedial means are employed within forty-eight hours of its inception. Many a useful life may be spared to be increasingly useful, by cutting a cold short off, in the following safe and simple manner. On the first day of taking a cold there is a very unpleasant sensation of chilliness. The moment you observe this go to your room and stay there; keep it at such a temperature as will entirely prevent this chilly feeling, even if it requires a hundred degrees Fah. In addition, put your feet in water half leg deep, as hot as you can bear it, adding hotter water from time to time, for a quarter of an hour, so that the water shall be hotter when you take your feet out than when you put them in, then dry them thoroughly, and put on warm, thick, woolen stockings, even if it be summer, (when colds are the most dangerous,) and for twenty-four hours eat not an atom of food, but drink as largely as you desire of any kind of warm teas, and at the end of that time, if not sooner, the cold will be effectually broken, without any medicine whatever." This theory is, no doubt, good for weak constitutions, but for a hale hearty person we would recommend the substitute of cold water drinks in place of the hot tea.

A New Tea.

M. Perie, a French botanist, announces that he has discovered a common herb in France which resembles black tea, in color, aroma, and taste, and that it can be cultivated as a substitute for it. We have no doubt but there are many indigenous herbs in the United States that would answer every purpose for which tea is now used, but taste is everything, and people will gratify their taste at any expense But instead of paying so much for China tea, would it not be wise to cultivate a taste that could be gratified at less expense.

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New Inventions.

Patent Trials.

BATTIN'S COAL BREAKER—In the U. S. Circuit Court, Phila., on the 31st ult., Judge Grier delivered an opinion respecting an injunction prayed for by J. & S. Battin (patentees of the machine for breaking coal, which was illustrated on page 17, Vol. 6, SCIENTIFIC AMERICAN) to restrain S. Syllyman, Heaton & Carter, and others, from using such machines. The Judge stated it would be ruinous to the defendants to stop their coal breakers, as the parts stated to be infringed formed but a very small portion of their machinery used. The motion for injunction was denied, with costs, and an issue was ordered to test the validity of the patent before a jury, on the first Monday of April, 1856, the defendants being ordered in the mean time to keep an account.

The patent of Battin has had many ups and downs. As first issued, in 1843, it was considered invalid, and after being six years in existence, it was surrendered in 1849, and a new claim obtained. On the 15th of Sept., 1850, before Judges Grier and Kane, Battin obtained verdicts against four different parties, for $800 each, and treble this amount, as damages, was moved for by the plaintiffs, while the defendants moved for new trials. The new trials were granted, and came off before Judge Kane in Sept., 1851, who, in his decision, declared the patent void, stating that the improvement claimed in the re-issued patent was public property, because it had been in public use for six years unclaimed. This decision of Judge Kane was reversed by the Supreme Court, and now there is to be another trial, to test the validity of the patent over again. The most complicated and uncertain machines in this poor world appear to be Courts of Law.

The sum asked by Battin for the use of the breaking rollers is only one cent per tun. This does not appear to be an oppressive tax by any means. The defendants denied that Battin was the inventor of the breaking rollers, and this will be the issue at the next trial. If he can substantiate his claims as the original inventor, his tribute should not be resisted any longer.

GOLD PEN CASE—On the same day, before the same Judge, the Bill of R. Rapp, praying for an injunction to restrain Bard & Wilson manufacturing gold pens, as being an inringement of his patent, was dismissed with costs.

Feed Motion for Saw Mills.

The accompanying figure is a perspective view of a new Feed Motion for saw mills, for which a patent was granted to Charles M. Day, of this city, (N. Y.,) on the 12th of June last.

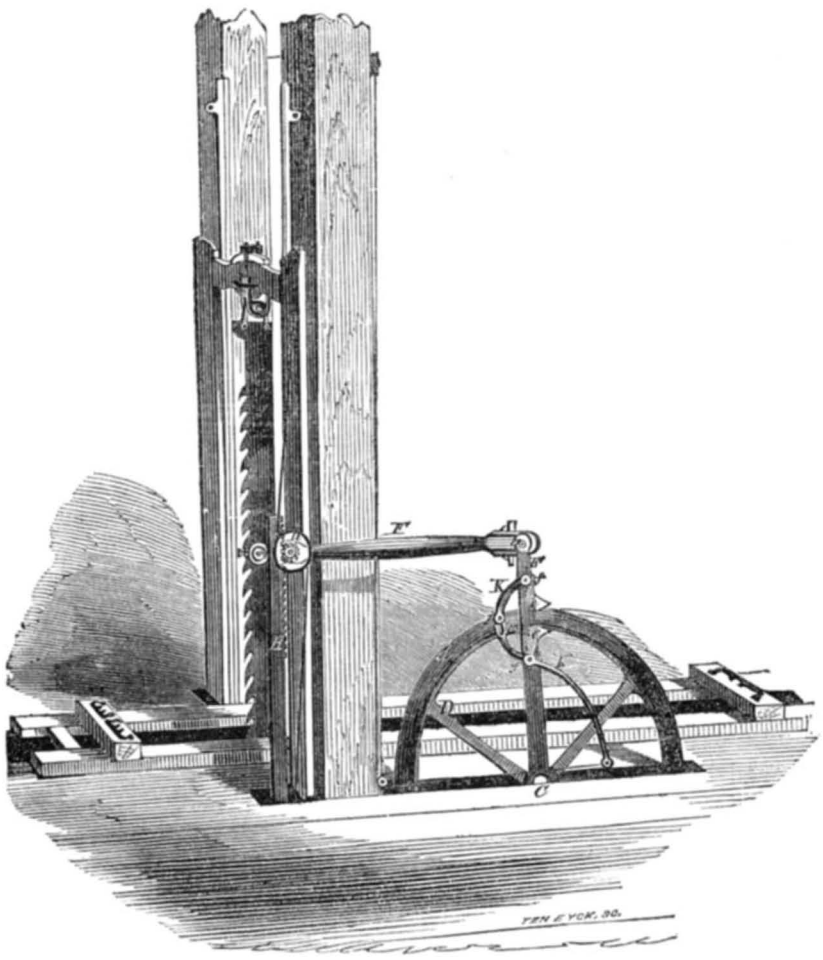
The nature of the invention consists in the employment of clamps attached to a lever and operating on a pulley, in combination with a lever, having a vibratory motion communicated to it by an arm which has a pinion on it gearing into a reciprocating vertical rack that operates the clamps, to feed the carriage of the saw mill with an intermittent motion.

The saw mill is built with suitable under framing and a vertical saw sash. The carriage shown to hold and carry the log or timber to be sawn, moves in suitable guide ways. The under side of the carriage has the usual rack on it. A pinion (not seen) on the shaft, C, gears into this under rack of the log carriage and gives motion to it. D is a pulley—one half of it passing through the floor—on shaft C; this pulley is operated by clamps, and constitutes the feeding agent. *d* is the projecting rim of the pulley. E is an upright lever fitted loosely on shaft C, behind the collar of the pulley. This lever has two clamps, *e e*, upon it, attached by pivots, *f f*. The lower curved face of the upper clamp, *e*, bears upon the outer rim of the pulley, D, and the upper curved face of the upper clamp, *e*, bears against the inner edge of rim *d*, of the pulley. K K are two levers attached to the pivots, *f f*,—the inner ends of these are connected by pin and slot—the pin, *f*, being attached to one lever, and fitting in the slot of the other. The upper end of the lever, E, is connected by a pin to the horizontal arm, F. *k* is a pinion on the one end of this shaft. H is a vertical rack secured on a vibrating shaft below, and not seen. The rack bar, H, gears with the pinion, *k*, of arm, F, and it is kept in gear with it by a friction pulley pressing on its back. There is an eccentric on the driving shaft of the mill below the carriage, which gives a vibrating motion, through a rod, to the rock shaft of the rack, H, and thus this rack receives a reciprocating—up and down—motion The rack bar, H, through the arm, F, communicates a vibratory motion to the clamp lever, E, and as it vibrates, on its forward movement, the clamps, *e e*, bind against the rim, *d*, of the pulley, D, and rotate it. As the pinion which gears into the carriage is secured on the shaft, C, of pulley, D, it follows that the clamps, *e e*, feed the log carriage towards the saw with an intermittent motion. It will be observed that on the back motion of lever, E, the clamps, *e e*, do not bind on the pulley rim. The length of the vibration of lever, E, can be increased or diminished by raising or lowering the end of arm, F, on the rack, H, and thus the feed of the carriage may be increased or diminished. The carriage is gigged back by releasing the clamps, *e e*, from the rim of the pulley, D, by means of the levers, K K.

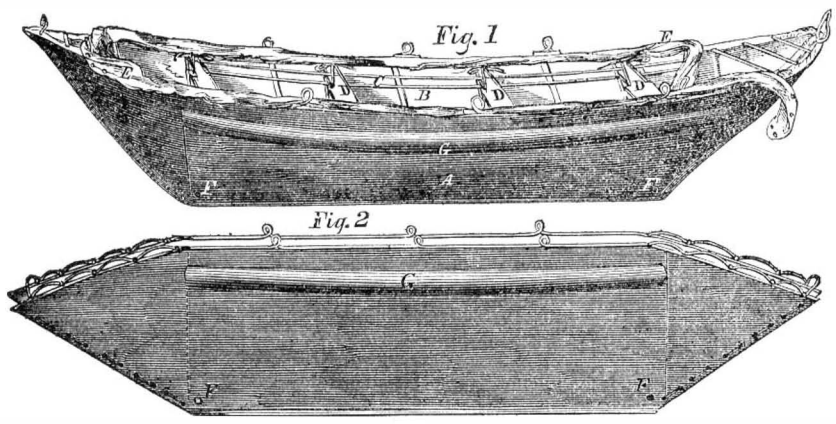
The patent embraces two claims, one for the clamps and the combination of devices whereby they are operated to produce the feed motion of the carriage, and whereby the amount of feed may be varied. The second embraces the mode of relieving the clamps, by the levers, K, for the quick gigging back of the carriage. One of these improvements is on exhibition at the Crystal Palace, and has been very favorably spoken of by a number of persons engaged in the lumber business, who have examined it.

More information may be obtained by letter addressed to Mr. Day, at No. 45 Avenue D, this city.

FEED MOTION FOR SAW MILLS.



STEPHENSON'S PATENT FLEXIBLE BOAT.



The accompanying engravings represent the flexible folding boat of Joseph Stephenson, of Philadelphia, now on exhibition in the Crystal Palace, this city, for which a patent was granted on the 27th of last February

Fig. 1 is a view of the boat ready to be launched, and fig. 2 is a view of the boat folded up.

A is the outside covering of the boat. It is made of strong water-proof cloth, coated on both sides with gutta percha. The outside covering is composed of two sides or pieces laced together at the bows, as shown. The bows are filled in with cork. B is an inside covering, of the same material as the outside, and is kept in place by the light wooden framing, C, which also supports the seats, D D. The inside covering and its flap is in one piece, and is placed over the hinged joints, thus making the boat perfectly water tight, and preventing the inside from being affected by the working of the boat in the waves, or injury that might happen to the outside covering. E are flaps attached to the sides of the boat. These can be braced to the bows at pleasure, to prevent the surf breaking over them and filling the boat. F F are valves to admit water into chambers between the inside and outside coverings, A B, to act as ballast and keep the boat steady. G is a fender of cork attached to each side; the bows being filled with cork are also fenders; these give strength and buoyancy to the boat. The boat has double bows, these are hinged, and being covered with water proof flexible material, form a boat that can be folded up and stowed away, so as to occupy but little space in a vessel when not required. It can also be readily prepared for use. Quite a number of these boats may be kept on board of every ship, as they are cheap and can be made ready quickly—thrown open and launched—in any emergency, to be used for the safety of life.

More information respecting it may be obtained by letter addressed to the patentee, at Philadelphia.

The Weight of Coal.

A correspondent of the Philadelphia *Ledger* signing himself "Anthracite," states that coal dealers will sell their coals at 2000 lbs. for a tun, in spite of Judge Grier's decision that a tun constituted 2240 lbs. He says coal dealers will avoid the terms of the law by selling their coal by 1000 lbs. and 2000 lbs, not using the terms *tun* and *half tun*. He also states, that the coal dealers sell the lesser weight for less, and there is no difference in price between the old and new rule, to the consumer. This is no doubt true. We go for a universal law of 2000 lbs. for a tun; but we object to selling 2000 lbs. for a tun, when it is nearly an eighth less. Let there be a complete understanding of the matter, so that the buyers will know the weight they are receiving for their money. Coal at $5,50 per tun of 2000 lbs., is dearer than coal at $6 per standard tun.

Judge Mason.

It is announced in the *Herald's* correspondence that Judge Mason had returned to Washington, and would immediately re-enter upon the discharge of his duties as Commissioner of Patents. We sincerely hope this statement is correct, and that he will remain there to fulfil the functions of the office. We are satisfied that no man in our whole country better understands how to perform its important duties than Judge Mason. He has won golden opinions from all classes, and has endeared himself to almost every inventor who has had business with the Patent Office.

Reform of Weights and Measures.

We are informed by a correspondent—James Edi—of Verona, Wis., that at the annual School Meeting in that place, a resolution was adopted to petition Congress for a reform in the laws relating to weights and measures, so as to adopt a uniform decimal system of weights and measures. Our correspondent strikingly alludes to such a system being the most perfect, and as being in use 2400 years ago among the Hebrews. "Thus saith the Lord, the ephah and the bath shall be one measure, that the bath may contain the tenth part of an homer, and the ephah the tenth part of a homer."

Investigation of the Cause of a Boiler Explosion.

About two months since, at the shop of the Boston and Lowell Railroad, at East Cambridge, a stationary boiler suddenly exploded injuring the engineer so badly that he died in a short time at the Massachusetts General Hospital. Coroner Stedman was called, and after making some inquiries, deemed it proper to thoroughly investigate the matter. Wm. Burnett, United States Surveyor of Boilers, Wm. P. Parrott, and other engineers skilled in such matters, were examined, and the result was that a verdict has been returned by the jury that the stay bolts connecting the fire box with the boiler, were too small and too far apart, and that the explosion was in consequence of this defect in its manufacture.

Growth of Western Towns.

The village of La Crosse, Wis., the terminus of the La Crosse and Milwaukie Railroad, was laid out only four years ago, and is now said to contain two thousand houses. It supports a newspaper, and enjoys the frequent visits of some thirty different steamboats.

Astronomical Science.

The President of the British Association for the Advancement of Science, in his opening address, at the yearly scientific gathering lately held in Glasgow, stated as one of the results of Lord Rosse's telescope, that for the first time, since the days of Newton, a suspicion has arisen in the minds of astronomers that laws other than those of gravitation may bear rule in space; and that the nebula phenomena revealed to us by that telescope, must be governed by forces different from those of which we have any knowledge.

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Scientific American.

NEW-YORK, NOVEMBER 10, 1855.

American Inventions and Ideas in Europe.

A few years since the Edinburgh *Review* gave vent to the expression, "Who reads an American book," as if insinuating that our country had produced no book worthy of being read. Viewed in this light the taunt was not applicable, for when it was made, many books by American authors were to be found in every library in Britain, and were read with profound respect, profit, and avidity by all classes. The remark (attributed to Sydney Smith) should have been allowed to pass without much notice, but instead of this, it has been made the text of more speeches than the sixth commandment. This much we have said as an introduction to a few words on American inventions in Europe.

American inventors and mechanics have never taken any great pains to proclaim their skill among the nations, and yet they have done more within the past few years to impress the people of Europe with correct opinions relating to their genius and activity, and to win greater respect than the writings of our authors, the speeches of our orators, and the doings of our statesmen.

At the London World's Fair, in 1851, the American Department made but an indifferent display; and at an early stage of the Exhibition it was made the subject of disparaging remarks by the London *Times*, but our mechanics and inventors did not get up meetings and make speeches, proclaiming what they had done and what they could do. No! they acted on a different principle. They gave the watchword, "Out with the Machines," and out they came, and conquered opposition by incontrovertible iron arguments. The victories of our Reaping Machines and American Locks, and the triumph of the American Yacht, following on the heels of one another, arrested the attention of all Europe, and extorted universal praise.

During the present year, the American Department in the Paris Industrial Exhibition has always presented a meager appearance, but it never was taunted for the character of the articles displayed. In fact, the European *literati* have become exceedingly timorous to give an opinion about an American machine, for fear, we suppose, it might prove to be some curious Yankee invention, that could be made to walk out and do the very thing they had asserted to be an impossibility. In this respect some little injury may be done to our mechanics abroad, for a little keen criticism, judiciously applied, oftentimes does a great deal of good. American sewing and mowing machines, American locks and clocks, American yachts, cloth cutting machines, india rubber goods, and other genuine inventions, stand out very prominently before the old world as representatives of American ideas; and what noble representatives they are. They proclaim the efforts of mind to subdue the powers of nature, and make them subservient to man for his advancement in wisdom, comfort, and knowledge. American inventors are doing great things for the industrial interests of the whole world, and their language is that of peace, progress, and friendship. A higher proportion of *first class* medals have been awarded to them at the Paris Exhibition than to those of any other nation, in proportion to the number of exhibitors. It is universally admitted that they have supplied a vast amount of ingenious labor-saving machinery to supplant that of muscular power, and have thereby wonderfully increased the industrial powers of mankind. As productive industry mainly constitutes the wealth of nations, they certainly have enriched the world with *solid* ideas. The question in Europe now is, not "who reads an American book," but, "have you got an American machine." As it is thus, at present, with American machines of various kinds, we trust t will be equally so with all kinds of American manufactures at the next World's Fair, wherever it may be held—there is still room for more new ideas.

Reminiscences of the Paris Industrial Exhibition. No. 5.

COTTON MANUFACTURES—This branch of textile manufactures is the ost extensive in the world, and employs the largest amount of capital. The goods produced from cotton are beautiful, cheap, and of great diversity.—America is the great cotton farm of Europe, and England is the great cotton factory. No subject should interest our people more than that of cotton fabrics, the raw material of which is grown mostly on our own soil, and exported annually, to the value of $109,456,000 giving employment to no less than 1,500,000 persons in Great Britain alone.

We were informed that the English cotton manufacturers took more pains, and made a much finer display in Paris than they did in their own country, at the World's Fair in 1851. They certainly deserved credit for the immense amount of cotton fabrics brought together, and for the fine machinery exhibited to perform all the operations, from the first incipient step in the manufacture, to the last finishing touch. This department was placed under the charge of a Manchester committee, and the Superintendent, Mr. Murray, seemed always present to afford every explanation to strangers. To an American it was one of the most interesting and instructive divisions of the Exhibition, as specimens of all the branches of the cotton trade were shown and arranged in proper order for examination; and they afforded us an opportunity of comparing them with the French cotton fabrics.

The cotton manufacture of France is small in comparison with that of England. The only kind of cotton goods in which the French attempt to rival the English is in fine muslins. There were English cotton velvets of a moderate price—half a dollar per yard—finished so beautifully that we had to handle them before we were satisfied they were not made of silk. Fustians, drills, and all the common kinds of low priced goods worn by the working classes of England, were exhibited in great abundance, and of excellent quality, and at such low prices as astonished both French and Americans. In fine printed muslins the French exhibited their superior taste, and stood head and shoulders above the English; indeed, this was manifest in the most common French calicoes. English printed cotton goods of the same quality as the French did not look so well; they were execrable in design, and vulgar in comparison, and we thought that, had American calicoes been placed in competition, they would have to be classed with the English. With respect to the price of such fabrics, however, the French could not stand a comparison; they were at least one-third higher. The idea that left its deep impress on our mind respecting English cotton goods, was their extremely low prices and excellent quality. We had no opportunity of visiting a French calico work, but we were informed that most of the printing is still performed by hand labor, with the old fashioned small blocks, while in England most of it is executed by machinery, as in the United States. This accounts for the English calicoes, but not other kinds of cotton goods, being so much cheaper.

Our object in devoting a chapter to the cotton goods in the Exhibition, is principally to direct the attention of our people to further improvements in such manufactures. In France with a much lower remuneration for manual labor than in England, cotton goods are nearly double the price. This is no doubt owing to the use of improved machinery and a well arranged system of manufacturing in the latter county. We can have, if we have not, as good machinery as the English, and we ought to make as great a variety, and as good qualities of *all* kinds of cotton goods. In the coarse fabrics, such as drills, and some kinds of sheetings, our goods are equal if not superior to those of Manchester; and the house of Merriam, Brewer, & Co., of Boston, were exhibitors of the cheapest and finest cotton flannels and muslin-de-laines in the Exhibition. They also took the highest prize for such goods at the World's Fair in 1851, and surely we can do as well in manufacturing other fabrics if we try.

We ought also to produce more beautiful calicoes than we do. The small block hand printing will not account for superior designs and a finer arrangement of colors in French goods. Many of our patterns are copied from the French, but somehow they are not so well executed. Has the Anglo-Saxon race a natural vulgar taste for flaring, ill-arranged colors? It really appeared so to us in comparing the English with French prints. There was the house of Bright & Co., of Manchester, which exhibited piled velvet carpets printed by machinery, with twenty colors, and at the price of only one dollar per yard; but the design of them appeared to us like debasing the multiplying power of machinery to depreciate the beautiful. The French printed goods filled us with admiration. Many of their fine printed muslins we thought superior, for their remarkable beauty, to silk or any other kind of goods, for ladies' dresses. It is our opinion that patterns as beautiful can as well be executed by machinery as by hand, and our American calico printers are surely fit for the task.

GREAT FAIR OF THE AMERICAN INSTITUTE

Fourth Week.

Public interest in the Fair, so far as the citizens of New York are concerned, appears to be falling off. The good people have been to the Palace, have had their fill, and are satisfied. Large numbers of strangers, however, from out of town, continue to arrive, and manifest much satisfaction at the unusual excellence of the display.

As yet the directors have announced no day for the closing, and we are indirectly informed that the exhibition will remain open as long as the public choose to continue their patronage. Would it not be better to close with a grand flourish of trumpets and a big crowd, than to suffer the exhibition to linger along, attended during its last stages by a few tardy stragglers?

During the past week the exhibition has been enlivened by a great trial of fire engines within the Palace. We annex a report of the affair.

We received a very polite invitation from Dr. Drake to examine the construction and witness the operations of his Gas Engine, on Monday last. We are sorry to say, however, that the machine only worked for ten or fifteen minutes, and came to a halt before we arrived. No better success has since attended the efforts of the inventor to keep it a-going, and it remains motionless. We still hope to see it go, however.

The Cloud Engine, we are also sorry to say, is in pretty much the same predicament. No test has been had, and the machine only runs by fits and starts. What is the trouble, we wonder? Who can tell us?

Wood Planing Machines.

Three varieties are shown all of them new inventions.

Barlow's Rotary Planing Machine is remarkable for the small space it requires. It is very compact, hardly occupying half as much room as an ordinary carpenter's bench. The operating power necessary is also very small. It planes with great rapidity, and produces work of the very best quality. The machine at the Palace will plane lumber 22 inches in width, or less, and 2 1-2 inches, or less, in thickness. The cutting is done on the under side of the board. The frame of the machine is in two parts, hinged, so that the upper part can be turned over whenever desirable, and the cutters thus handily got at. One of the feed rollers is carried in the upper frame, which is almost the only part of the machine that requires adjustment. Changes of thickness are made in the most convenient manner, by raising or depressing the upper frame. The cutters consist of long straight edges, of the same length as the machine is wide. Price $500. Patented 1855. Illustrated in the SCIENTIFIC AMERICAN. Made by the Newark, N. J., Machine Co. Exhibited for the first time by Alfred Conger, agent, No. 345 Broadway.

Morse's Patent Planing Machines—This machine planes both sides of the lumber at once, tongues and grooves at the same time, and if the board is wider at one end than the other, reduces it down and brings it out finished, of equal dimensions throughout. The tongueing is done in a peculiar manner, viz., by simultaneously grooving the board on both sides, thus cutting through and leaving a smooth rounded tongue, which is superior to the tongues made by cutting down on the edges of the lumber. This machine appears to have the combined effectiveness of two or more of the ordinary planing machines. It turns out superior work. Price $1000. A very clear description and illustration of its construction was published recently in the SCIENTIFIC AMERICAN. Patented 1855. Now exhibited for the first time by the inventor. C. B. Morse, Rhinebeck, Duchess Co., N. Y.

Gray & Wood's Planing Machine is a simple looking affair, operates very easily, and does superior work. The cutters are long straight edges attached to a rapidly revolving shaft. Planes 25 feet per minute; requires from one to four horse power, according to stuff; can be used for cornice sticking, and all other kinds of work. The cutters are arranged above the board, which is placed on a traveling carriage like Daniel's machine. Price of a machine capable of planing boards 8 feet long, 20 inches wide, only $210. Larger size, larger price. It is an excellent invention. Exhibited for the first time by Ball & Ballard, the manufacturers, Worcester, Mass.

Wood Carving Machine.

This improvement is intended for use in the production of ornamental carved work for furniture, &c. The stuff is first cut out into the desired outline form by means of a common scroll saw, and then brought to the machine to be finished up. The apparatus consists of a common table, up through the top of which two or more cutter heads project. The sides and edges of the stuff are worked and finished smoothly by being brought in contact with the cutters, which revolve 4000 times in a minute. One of these machines, we were informed, will save the labor of thirty or forty men. Price $300. We were shown several specimens of furniture, such as tables, side-boards, &c., made by this invention. By changing the form of the cutters, the design of the carving is also changed. Now first exhibited. N. Gear, inventor; J. H. Dougherty, No. 11 Canal street, N. Y., exhibitor.

Improved Tenoning Machine.

Mr. C. P. S. Wardwell, of Lake Village, N. H., exhibits for the first time one of his new tenoning machines, on which there are two patents, the last having just been granted, (see this week's list of claims.) The tenoning is done by means of saws. All the different kinds of tenoning are executed with a rapidity and excellence that is really surprising. We have seen nothing of the kind that equals it. The inventor claims for his improvement the following advantages:—

First, only a small quantity of the wood removed is reduced to sawdust; a considerable saving of time and power is thus effected. Second, it always cuts a perfect shoulder. Third, if the wood is ever so knotty, cross-grained, &c., a smooth tenon is made. Fourth, the machine cuts double or lap tenons, of any size generally required, and saves a vast amount of hand work. Fifth, it is furnished with a cutting-off saw, which not only saves once handling the stuff, but is always ready and very convenient for squaring the ends of stuff generally.

When preferred, the machine can be made a cylinder, by substituting cylinders for the shoulder saws, thus combining two machines in one. Price of an ordinary-sized machine for doing door work, sashes, blinds, bedsteads, car work, &c., $120. Cheap enough.

La Baw's Miter Cutting Machine.

The miter is cut by means of straight edges, in this improvement, not by saws as in the ordinary manner. The cutters are attached to a suitable post or carrier which moves vertically, up and down, by means of a treddle. The angle of the cutters is readily varied and adjusted by set screws. The machine makes a clean, beautiful cut, works quick, and is very simple. Price $50. Patented 1855. Exhibited for the first time by Jos. Colton, 335 Broadway, N. Y.

Machine for Picking and Opening Fibrous Materials.

Mr. Richard Kitson, of Lowell, Mass., exhibits one of his patented machines for picking cotton and fibrous materials of all kinds. The invention is one of great merit. The main cylinder, on which the picks are arranged, is both self-sharpening and self-cleaning. This is done by an ingenious mode of drawing air into the cylinder box, and then causing the air

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to impinge against the base of the teeth, pass away at their points, and thus blow off the material. The continual friction of the material in thus passing from the points of the picks keeps them always sharp and also clean, for the stuff can never pass entirely around the cylinder. The teeth have a new and peculiar fastening, and are made in pairs in the form of a U. The method of fastening renders them stronger, while their form greatly cheapens their cost.

These machines are capable of picking cotton, cotton waste, flax cotton, tow, curled hair, &c., at the rate of a tun or a tun and a half per day. They do about double the work of other machines in a far better manner, last forever, almost, and never get out of order, we are told. Price $250. We regard this invention as a most excellent one.

Apparatuses for Making Gas.

Three inventions for producing illuminating gas are exhibited at the Palace, different materials being used in each.

Aubin's Patent Gas Apparatus makes gas out of resin, produces a brilliant light, is very simple in its operations, and well adapted for use in hotels, churches, and private dwellings. The process consists in heating a vessel containing a small quantity of resin over a common fire, and passing the gas thus formed through water. It is then ready for use. The whole apparatus occupies but little space; that shown at the Palace is a stove-like looking affair. We were told that it was capable of making 1,000 feet of gas per diem. It can be used in dwelling houses with convenience, requires no special attention, and makes no offensive smell. Price, with gasometer capable of holding 200 feet of gas, $250. Cost of light, 1-4 of a cent per hour for each 5 foot burner. Exhibited for the first time by the inventor, N. Aubin, No. 23 West Broadway, N. Y.

Porter's Patent Wood Gas Apparatus—This consists of a small furnace with a retort placed over the fire. The gas is produced from pine or other resinous woods, small blocks of which are placed on a shelf within the retort. The action of the heat causes the resinous products of the wood to melt, and, escaping from the pores, they slowly drip down upon the bottom of the retort, where the heat is more intense, and by which they are converted into carburetted hydrogen gas. The gas thus formed then goes through a slight purification, when it is ready for burning. The substance left in the retorts, after producing the gas, is charcoal of a first rate quality. The light produced from this gas, we observe, is not so brilliant as the other kinds, but it is very cheap and easily made. The apparatus is also very simple, and of trifling expense. One cord of wood, it is said, will produce 2,000 feet more of gas than can be made, by any known process, from a tun of the best Pittsburg coal. This invention was illustrated in the last volume of the Scientific American. Now first exhibited by the inventor, Lieut. W. D. Porter, U. S. N.; G. H. Thomas, 95 Duane st., N. Y., constructor.

The Maryland Gas Apparatus consists of a cylinder stove containing a hemispherical retort, a cast iron box or condenser, and a tank with a gas-holder, as is common to other gas works. The material used is a cheap resin oil, furnished, we are told, at 18 cents a gallon; each gallon will make 100 feet of gas of double the illuminating power of coal gas. In using the apparatus, the retort is first heated to a cherry red. An oil cock attached to the reservoir above is then opened a little to allow the oil to pass by the syphon into gas, and passing through a purifying chamber in the upper part of the retort, is conveyed by a pipe to the condensing box, and thence to the gas holder, ready for use. The smallest sized apparatus is capable of producing 300 feet of gas in 3 hours, which is as much as an ordinary family will consume in a week. Cost $350 put up. We were much pleased with this invention. Made and exhibited by Coates & Co., 376 Broadway, N. Y.

Gas Stoves.

The time is approaching when the use of common stoves, and the consumption of coal and wood in our city dwelling houses for cooking and warming purposes, will be wholly done away with. Dust and ashes will disappear; smoky chimneys will never be known. The cook will have but to turn a magic valve when lo! a roasting fire will be before her. Early breakfasts will no longer be difficult; housekeepers will lose their troubles, and the whole world will take a fresh start.

The Phenix Gas Company, No. 163 Broadway, N. Y., and the American Gas Company, No. 358 Broadway, are doing all they can to realize these refreshing expectations. They exhibit a variety of ingeniously contrived stoves and heating apparatus, in which gas is the only fuel employed.

In some of them there are pipes finely perforated and placed near together; in others there are hollow disks, the faces of which are minutely punctured for the escape of the gas. In both plans beds of blue flame, of any desired size, and of great heating power are produced. Externally, the stoves resemble the common summer bakers. Prices range from $8 to $14, according to size. Light, portable, requiring no setting, they may be connected with any gas pipe by means of a flexible tube. The excellent contrivances for heating tea kettles, flat irons, gridirons, steak-holders, and the like, all utilized by gas, seem to excite curiosity and wonder among the ladies.

We have seen some very favorable certificates from persons who have used these inventions; they uniformly agree that gas, even at the present high rates, can be used with more economy in certain branches of cooking than any other. But for domestic purposes generally, we think the cost of gas must be reduced at least 50 per cent. before it can fully compete with anthracite coal.

Meacham's Apparatus for Washing Window's.

Housekeepers, we are sure, will appreciate this invention. Its object is to facilitate the thorough cleaning of windows, and to prevent the splashing of water upon furniture, carpets, and curtains, during the progress of that necessary operation. A pot of clean water is hung, by hooks, upon the window frame above; from this vessel a small flexible tube of india rubber descends, its end terminating in a brass pipe furnished with a sponge. Turn a faucet, and the water oozes gently through the sponge, which is now applied to scour the glass. Unscrew the sponge and put on the rinser, which is a pipe perforated with pin holes, and the window may be finished off in fine style. An india rubber tray is placed under the lower sash to catch all the water. Price of the apparatus, tray and all, $3,50. Patented Jan 30, 1855. Now first exhibited by Geo. A. Meacham, No. 290 Broadway, New York. See illustration in last volume of the Scientific American.

Patent Bread.

Not least among the novelties at the Palace are the specimens of Patent Bread exhibited for Messrs. Crum & Paul, by A. W. Goodell, No. 115 Nassau st., N. Y. They are made under the patent granted to Charles Crum, of Hudson, N. Y., March 6th, 1855. The process consists in suffering the dough to pass into the acetous state, then reviving by working into it fresh unfermented flour, then cutting, piercing, raising in the open air, and baking in an open oven.

Among the advantages claimed for bread thus made are the following: The bread is more uniform in its quality and much handsomer in appearance than the ordinary kind; it is of a much whiter color than any bread heretofore made; it is more even in its texture, the vesicles being far more evenly diffused through the mass than they ever can be by the old method; it requires less than half the time to prepare it for the oven; no drug whatever is contained in it, nor can any be introduced without injury; it keeps much longer without growing stale, and to many persons is not objectionable when a week old; it cuts as handsomely as the finest pound cake, and without any waste, the crust being as tender as the finest French roll; it goes further, that is to say, we suppose, it is more nourishing, or else so much of it cannot be eaten at once.

The specimens we have seen are really beautiful. One of the greatest advantages of the process appears to be in the facility with which the dough can be worked up by machinery. We are told that it can be made on any cracker machine now in use, either by hand or steam power, without injury to the machine, and that, if necessary, 10,000 loaves per day can be made ready for the oven on one machine, with the aid of two men. If this is so, the saving of labor to bakers is immense, and ought to cheapen the price of bread in cities. Now exhibited for the first time. Patented in Europe through the Scientific American Agency.

Flax Cotton.

Several most elegant specimens of flax cotton, made under the patent granted to Jonathan Knowles, Feb. 14, 1854, are exhibited by the Knowles Patent Linen Fiber Company. For beauty of coloring, fineness, delicacy, strength, and pliability of fiber, they surpass other samples of flax that we have seen. It has long been known that the stalk of the flax plant was capable of conversion into cotton, and that when thus prepared it possessed many important advantages over the staple now so extensively cultivated in the United States, and so universally used by the population of the world. Flax may be spun, woven, and manufactured into every variety of goods that are made of common cotton. It may be used in many kinds of cloth, combined with wool, where cotton is excluded, and in all cases forms a superior substitute; it holds color better than cotton, or even wool. Flax is very easily cultivated, and grows with vigor wherever corn and wheat flourish. Nothing can be more plain than the fact, that if there were any economical process whereby the flax stalks could be easily changed into cotton, its cultivation would be rendered universal. It would become one of the great staples of the world. In the back volumes of the Scientific American we have published much valuable information respecting flax, and the methods of its preparation. Claussen's process, which at one time attracted considerable attention, we have fully described. It is said that Claussen could not produce the prepared flax so cheaply, nor of so good a quality as the ordinary cotton of commerce, and hence his discovery was of little avail, and has almost passed into oblivion. The Knowles Company now present themselves to the public, and claim to have succeeded where Claussen failed.

Knowles' process consists in cutting the flax stalks, whether rotted or not, into proper lengths for staple, boiling it in a weak alkaline solution of soda or potash, until the shives separate on rubbing. It is then bleached by chlorine, adding, at the same time, borax, salt, saltpeter, Glauber's salts, Epsom salts, sal ammoniac, or other similar salt. It is then washed with water and dried.

The Company assert that in this manner the farmer can produce flax cotton at a cost under five cents a pound, whereas common cotton sells for from eight to twenty cents. The apparatus required costs from $500 to $1000, to which, we suppose, must be added the cost of the right to use the patent.

If the statements of the Knowles Company are correct, and we have no reason to doubt them, the invention is certainly one of extraordinary value and importance. The subject is worthy the most careful examination by all agriculturists and manufacturers.

Among the members of the Company we notice the names of several of our most respectable citizens: Charles M. Keller, Esq., is the President. The original capital subscribed was $5000. Subsequently it was increased to $1,000,000, in order to purchase the English and French patents. Mr. Knowles appears to be a very lucky inventor. The American and foreign patents were taken through the Scientific American Patent Agency.

New Door Lock.

Messrs. Holmes, Valentine & Butler, of No. 90 Maiden Lane, N. Y., exhibit, for the first time, a new lock, the patent for which is only just out—(see claims in another column.) It is a very ingenious affair, so arranged that if you put in the key and simply push, the door instantly opens, no turning of knob being required; and, on the other side, if you simply pull a knob, egress is just as easily obtained. The arrangement of parts is very simple and effective, while for convenience the improvement is wholly unequalled.

This lock is guaranteed by the makers to be secure against the attacks of the most skillful lock-picks. For dwelling houses, store doors, &c., it possesses the advantage of rendering useless the huge clumsy key now in use, as the key is so small that a dozen of them may be carried in the vest pocket. From the peculiar construction, millions of changes may be made in the form; and it becomes almost an impossibility for any two locks to be alike

Improved Punching and Shearing Machine.

The excellent invention of Messrs. Liddel, Kepler & Co., of Erie, Pa., which now for the first time is exhibited, will be found fully illustrated and described on the first page of this journal. Machinists will do well to give it a careful examination.

Exciting Trial of Fire Engines.

There are on exhibition at the Palace some twelve or more fine specimens of our city fire engines, and during the past week a public trial of their merits was made, by order of the managers of the Fair. The engines were worked inside of the Palace, which, as all our readers know, is amply spacious for any such demonstration. A supply of water was thrown up by the steam pump into a tank in one of the Palace towers, and thence conducted down by bore to the engines. Pipes led from the latter along the floors of the building, out of doors, to the base of a tall shot tower near by, once known as the Latting Observatory. On the side of this building a scale of feet were chalked off, with large figures, so that every body could see how high the water was thrown. A concourse of perhaps five thousand people had assembled within the Palace to witness the trial, while on the outside there were, no doubt, as many more.

At the appointed time, a large and splendid engine called the *Atlantic*, No. 13, of Brooklyn, was wheeled into position, hosed, and manned by 59 men. The signal being given, at it they went, and for two minutes (the time allotted) worked as hard as men could work, cheered and encored by the surrounding crowd. This engine forced the water through a level length of hose of 3450 feet, and then threw it up perpendicularly to a hight of 104 feet. The powers of the machine were then tried at throwing a horizontal stream, 150 feet of hose were allowed, through which the water was made to spurt 216 feet, 10 inches. This engine was built by James Smith, of New York. Stroke 12 inches, cylinder 8 1-2 inches.

The next trial was with the *Niagara*, engine No. 8 of Brooklyn, manned by 44 men. Hose &c., same as before. This machine threw the water six feet higher than her rival, viz.: 110 feet, and such a yelling as went up from the lungs of the great crowd, when this fact became known, beats all. On a level the water was thrown 216 feet. This engine was built by Wm. Jeffers, of Pawtucket, R. I. 12-inch stroke, 10-inch cylinder. Both machines, which were first class, played out of a 1 1-2 inch nozzle.

Next came the trial of the second class engines, playing through the same hose, but with 1-inch nozzles. The following were the competitors: *Oceanus*, No. 11, of N. Y.; 8-inch cylinder, 9-inch stroke, 44 men, threw the water up 90 feet; on a level 149. W. J. H. Forbes, N. Y., builder. *Guardian*, No. 29, of N. Y. 8-inch cylinder, 9 in stroke, 44 men. Same builder. Threw 86 feet high, and 154 1-2 feet level. *Manhattan*, No. 8, of N. Y. 8-inch cylinder, 9-inch stroke, 48 men. John Rodgers & Son, Baltimore, Md., builders. Threw the water 80 feet high, and 164 1-2 on a level. *Aurora*, No. 45, of N. Y., had four 7-inch cylinders, 5-inch stroke. Carson's patent side lever arrangement. Pine & Hartshorn, N. Y., builders, threw the water 80 feet high, and 169 1-2 feet on a level.

The third class machines, or those playing through 7-8-inch nozzles, were next to come forward, but only one engine played, with the following results: *Pacific*, No. 28, of N. Y. Side lever, crane neck, 7 1-2-inch cylinder, 7-inch stroke, 44 men, threw the water 84 feet high, 189 1-2 feet on a level.

The supply of water, at this stage of the trial, gave out, and one or two other engines that were to have competed were withdrawn and the affair closed. We believe that the same hight has seldom been reached with the water forced through so long a length of hose. The affair was one of great interest and excitement; it will be long remembered by those who were present, among whom were veteran firemen from Boston, Providence, Philadelphia, and other cities.

[Our notices of the Fair will be continued next week.]

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TO CORRESPONDENTS.

J. C. T., of Tenn,—No person willdispute your proposition respecting the method of converting the contents of a cylinder into that of a square box, but that will not enable us to square the circle. If it were the correct method you should have given the rule.

A. A. K., of Tenn.—You say your fall of water is eight feet, and the quantity 600 cubic inches, and wish to know its power. You do not state the amount of water that falls in a second or minute, consequently we cannot tell the power of your stream. The rule is to multiply the weight of water in pounds that falls in one minute. into the hight of the fall in feet, and divide the product by 33,000 for the answer in horse power. One-third of the amount thus obtained is deducted for loss when applied to an overshot water wheel.

T. W. B., of Geo.—We do not think there is any late improvement for cleaning rice. Very little has yet been done in this branch of machines.

S. S., of Pa.—We cannot inform you who makes "Polley's Elastic Adjustable and Expanding Buckets for chain pumps."

J. W. L., of Ohio—The meagre description of your alleged improvement in rollers for printing the alphabet in account books, does not convey a clear idea of its operation. From our present understanding of it we should think it possessed some novelty. We would advise you to send us a small model of it with a clearer statement of its operation. The result is now accomplished by several machines. Your plan seems to differ from every other in use for the purpose.

S. M. S., of Ill.—In answer to your letter of the 29th ult., we would state that an elastic rein has been applied to a bridle as you propose. We have had a model of the same thing in our possession. It would no doubt operate very well. Your improvement in stop valves for boiler pumps appears to be new, and we should think a patent could be secured for it. We do not think the corn planter embraces novelty sufficient to justify an application for a patent.

C. C., of Canada.—It is necessary, in all cases, that an application for a patent should be made in the name of the inventor. You could not assign it to an American citizen, and thereby save the $500 fee required of all British subjects. We are ready to acknowledge that this tax is severe and very unjust, but it is much more liberal than the Canadian system, which excludes all foreigners from the privilege of taking patents. We are decidedly in favor of a liberal system of reciprocity in all such matters. We hope you will labor to wipe out the disgraceful patent system that now exists in Canada. American inventors are not, as a body, illiberal towards foreign invention —far from it.

R. T., of Ct.—If a patent were issued to you for an invention that had been publicly and commonly used for more than two years previous to making your application for a patent, the law would declare it a nullity. Inventors should never allow their inventions to remain so long without protection. It is unsafe, and works mischief that has no legal remedy under the present patent system.

E. P. G., of Canada West—You ask if there is a patent in Canada on the thermometer churn. It is impossible for us to answer this inquiry, as we have no means of access to the list of Canadian patents. You are better situated to examine the list than we are. If the invention is American it could not be patented in Canada. Your laws would not permit it, they are too illiberal for that.

W. H. C., of Virdea.—When a patent is extended, the extension is for the benefit of the patentee: owners of rights under the original patent have no rights under the extended patent without re-purchase.

H. C., of Ct.—Your improvement in watches appears to be novel, but a patent in this country would not be worth procuring, as very few watches are made here.

W. A. R., of Md.—We think your improvements in let-off motion for looms, possesses decided novelty. You had better send us a model without delay. If another party is endeavoring to forestall you, there is no sense in your being behind him.

D. D. A., of Mass.—It is not a new idea to force air through a long tube by a water wheel to use the compressed air for propelling an engine, at a considerable distance from the wheel. This is your plan. See the same proposed by a correspondent on page 75, Vol. 3, Sci. Am.

A. D. B., of Pa.—Cast iron cannot be melted in a ladle. It requires an air blast to melt it. It would require a very long letter to describe the method of dyeing sheep skins so as to be of any benefit to you.

J. B., of La.—The cylinder of your engine being but five inches in diameter, and the stroke eighteen inches. you may run it as fast as you can if it is well made. Your boiler being thirty-four inches in diameter, with two ten inch flues, if of good matetial, will carry 100 lbs pressure. The higher the pressure the greater the amount of power. The only way to tell the pressure a boiler can safely carry, is to test it by a hydraulic press. We would, in your case, never carry a higher pressure than 50 lbs. to the square inch. There is no positive rule for the fixed speed of any engine.

M. K., of East Brooklyn.—You will find the article on enamelled leather on page 379, Vol. 7, Sci. Am.

W. C. B., of Ga.—You will find that you connot construct a self-moving machine in the manner described in your letter. The magnets which you intend to use to draw up the balls, will retard their continuous motion, so that they will be of no use whatever.

J. B. F., of Ct.—The only way to prevent the polished parts of your machine from rusting, is by keeping them covered with grease. Iron will rust when exposed to a moist atmosphere, and the only method of obviating this is to protect its surface.

G. R. P., of C. E.—Ure's Dictionary of the Arts is the book we recommend you to get.

M. S. N., of N. Y.—Copper alloyed with one-tenth of its weight of lead, forms a composition much used for taps, oil cups, &c.

J. B. E., of Mass.—There is no doubt of the fact that in making butter, the cream should not only be agitated but a quantity of atmospheric air should also be mixed with it. The idea of mixing air with the cream has been accomplished in various ways. Hollow tubes have been employed almost precisely like the one sketched in your letter. We see no chance for a patent on it.

J, G. T., of Ohio—In answer to your letter of Oct. 26, we would state that we do not think the combination of a die with the jaws of a pair of pincers could be considered as embracing the subject matter of a patent. We think the Office would refuse the claim for want of novelty, therefore we cannot advise an application.

M. H., of Geo.—By reference to our reports on the American Institute Fair you will find the sewing machines noticed. You can judge from our remarks which will best answer your purpose. Thank you for your good opinion of the Sci. Am., and for your efforts to extend its circulation.

C. W., of N. Y.—Your opinions respecting the inferiority of turbines in comparison with overshot and breast wheels, may be correct; it is for our millwrights to test the relative merits of each, and thus demonstrate which is the best, so that there can be no dispute hereafter on the subject. We presented the results stated to have been achieved by the Lowell turbines, and a mere opinion is no offset against the statement of Mr. Francis.

M. N., of N. Y.—Who put the notion into your head that the one half of an iron ball suspended in mercury was lighter than the half out of it?

A. B., of Mich.—We are not able to inform you who is the most extensive manufacturer of saw mill machinery for the eastern lumber districts.

B. C. C., of Texas—We do not know where you can procure the experiments made on cannon under the Ordnance Department at Washington. They have never been published that we know of. We do not understand exactly how Mr. Edge makes his rockets. Your fine list of subscribers are acceptable.

J. D. Monk, of Selena, Ala., wishes to procure the best machine in existence for making clay conduit pipes, of different sizes, for drainage. Can some of our readers oblige him with the information?

H. H. A., of Ill.—We would advise you to apply to the Member of Congress in your district for a copy of the Patent Report. We know not how else you can procure it.

W. B. G., of N. Y.—The improvement you suggest in the "Bender" is new, but we consider the whole arrangement impracticable; therefore, we cannot advise you to spend time and money over a scheme that promises so little ultimate advantage.

A. R, of R. I.—You say you have discovered a veritable perpetual motion, and ask our opinion of it. We will give it without seeing the machine. The thing is impossible, therefore there is no difficulty in deciding against your plan. Every attempt to produce such a machine has hitherto failed, and this will be the result of every subsequent attempt. It will be time worse than wasted to attempt it.

G. T. B. E., of Me.—An endless chain water wheel is among the oldest devices known for the purpose. You will find it illustrated in Vol. 3, Sci. Am., also in all the encyclopedias devoted to mechanical engineering. It has been re-invented by a host of inventors. There is not a shadow of chance for you to procure a patent on it.

M. P., of Vt.—The Commissioner of Patents will not allow the examination of a case to proceed when the model is larger than can be admitted. You can send a new model at any time; but bear in mind that the case will remain suspended until a new and proper sized model is supplied. You had better get a new one ready as soon as possible.

C. A., of Ark.—You ask if a rotary pump has ever been invented. Yes, sir! a great many times. See back volumes of the Sci. Am. for several different plans.

B. A., of Vt.—You must send us a sketch and description of your hub riming machine before we can understand its natu re and construction. Machines for the purpose have been invented, but yours may be new. We will give our opinion on this point when the sketch reaches us.

S. M., of N. C.—Oscillating engines are becoming much used. They are simple and effective. You will be safe in getting one of Reed's. Do not know the price of the different kinds.

B. D., of Va.—Another pump—Well, we should think the world would be pumped dry after a while, with so many powerful pumping machines. We cannot say much for yours so far as novelty is concerned. It will work, there is no doubt of that, but the same arrangement of valves is found in various pumps in use.

R. R., of Mass.—We cannot publish your article upon the India Rubber Controversy. In the first place it is too long, and in the next place it is of no interest whatever. The fact is, the india rubber controversy has become a bore—a sort of Jarndyce vs. Jarndyce affair. The belligerents on both sides are supposed to be right, therefore the public care but little which whips. We are on neither side, and your gentle hint to the contrary is gratuitous and unhandsome.

D. C., of N. Y.—Your remarks on the Woodworth Patent Extension are correct. It must be defeated, and it can be if the people will act promptly in the matter. There is no equity in the claim, therefore justice demands that it should be opposed with success. One of the plans adopted by the friends of the extension, we understand is to visit each Member of Congress at his residence, and thus, if possible, wheedle them into a support of the scheme. Shameful! An effort is now being made by those opposed to it, to procure the attendance at Washington of a few solid men who can, and will, watch every manœuver made to carry the measure through. This, together with a heavy volley of remonstrances, will defeat it. We intend to send a remonstrance from our office that will reach clear round the Capitol.

N. B., of R. I.—The second annuity, $250, on your English patent will be due Nov. 23, in London. The Patent must also be returned to the London Office if you intend to pay the annuity, as it is necessary to have the payment stamped upon it. We wrote you at Providence some time since, without getting a reply. You have no time to loose.

Money received at the Scientific American Office on account of Patent Office business for the week ending Saturday, Nov. 3, 1855:—

S. I. J., of N. Y., $30; E. B., of Mass., $250: J. W. B., of Ark., $10; L. B., & H. A. M., of O., $25; G. W. C., of O., $25; D. S. H., of R. I., $25; J. & S., of Me., $30; J. F. T., of N. Y., $25; S. G., of Mo., $30; J. E. H., of Tex., $30: A. Q., of N. Y., $25; J. E., of R. I., $30; J. R., of Miss., $57; C. H. B., of Mass., $30; J. H., of O., $25; E. H., of C., $30; J. L. B., of O., $25; J. P. of L. I., $45; N. C., of Ct., $20; E. S. F., of N. Y., $35; A. M. G., of N. Y., $30; W. W. W., of Mass., $27; B. T. B., of N. Y. $250; R. & T., of N. Y., $250; A. B. S., of Pa., $30; H. B H., of O., $40; W. H. F., of Ky., $27; H. S., of Ct., $30; G. A. S., of Ind., $25; P. A., of N. J., $25; S. & C., of Ind., $30; W. A. M., of Mass., $25; K. & L., of Mo., $30; C. & D., of Ct., $30; E. D. R., of N. Y., $30; R. W. & D. D., of O., $250; W. B., of L. I., $25; M. P., of N. Y., $25; H. N. DeG., of N. Y., $27; J. L. P., of N. Y., $25; W. F. K., of N. Y., $55; J. M. P., of N. Y., $110.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Nov. 3:—

D. S. H., of R. I.; J. & S., of Me.; J. F. T., of N. Y.; L. B., & H. A. M., of O.; G. W. C., of O.; A. Q., of N. Y.; W. B., of L. I.; S. G., of Mo.; J. H., of O.; J. L. B., of O.; N. C., of Ct.; M. P., of N. Y.; W. W. W., of Mass; J. P., of L. I.; H. N. DeG., of N. Y.; H. B. H., of O.; A. F. W., of Ky.; J. W. K., of N. H.; J. L. P., of N. Y.; W. L., of Md.; W. A. M., of Mass.; W. & C., of N. Y.; P. A., of N. J.; G. A. S., of Ind.; F. J O., of Mass.; O. B. J., of N. Y., E. A. P., of N. Y.; J. M. P., of N. Y., (2 cases); W. F. K., of N. Y.

Important Items.

Back Numbers and Volumes—The following numbers and volumes of the Scientific American, are for sale at this office, at the annexed prices:—Volume VI., Vol. VII, Vol. IX, and Vol. X, complete. Price, *bound*, per Volume, $2,75. Numbers in sheets, complete, $2. Of Volumes IX. and X., we have also about 40 numbers each, not consecutive, which will be sent by mail on reeeipt of $1.

Receipts—When money is paid at the office for subscription, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a bona fide acknowledgment of the receipt of their funds.

Binding—We would suggest to those who desire to have their volumes bound, that they had better send their numbers to this office, and have them executed in a uniform style with their previous volumes. Price of binding 75 cents.

Literary Notices.

Knickerbocker Magazine—The November number is out, and as full of wit and humor as usual. To hypochondriacs we would specially recommend this magazine; it will prove an effectual antidote to melancholy, and is not bad for any to *take*. Samuel Hueston, 348 Broadway, publisher.

Putnam, for November: Dix & Edwards, publishers, 10 Park Place. This sterling magazine pays us its monthly visits most punctually. We have been much interested in an article on the United States Coast Survey, in the last number, and was happy to see the name of our old corresponde nt, Mathiot, favorably mentioned in connection with the electrotyping department. We quote a single sentence: "The art of electrotyping has been very much improved by Mr. Mathiot, in the Coast Survey Office, and probably the best electrotype plates in the world are made there."

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Private consultations respecting the patentability of inventions are held free of charge, with inventors, at our office, from 9 A. M., until 4 P. M. Parties residing at a distance are informed that it is generally unnecessary for them to incur the expense of attending in person, as all the steps necessary to secure a patent can be arranged by letter. A rough sketch and description of the improvement should be first forwarded, which we will examine and give an opinion as to patentability, without charge. Models and fees can be sent with safety from any part of the country by express. In this respect New York is more accessible than any other city in our country.

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A. BELY, Counsellor at Law, 52 Washington street, Boston, will give particular attention to Patent Cases. Refers to Messrs. Munn & Co., Scientific American. 16 1y*

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Science and Art.

On the Use of Double and Single Engines.

The following are two letters on this important subject. The one presents some very good arguments in favor of the use of double engines, while the other presents an incontrovertible argument—not against the double engine—but in favor of a single engine, when well made. A single cylinder engine that can drive a grist mill as steadily as a water wheel, is all that can be expected from steam, whether applied to one or two cylinders :

MESSRS. EDITORS—The question has been proposed through the SCIENTIFIC AMERICAN, does "one engine of double capacity, and plenty of fly wheel, use steam more economically than two?" and to solve the question it is proposed that two engines, equally well made, be tried; but such a trial is not likely (in my judgment,) to take place very soon.

All scientific men that have paid any attention to the subject are well aware that the double engine works with vastly more regularity than the single, and, therefore, is much to be preferred in driving any machinery that requires a steady power ; then, if the double engine requires no more heat than the single to do the same work, it is important that it should be generally understood, for I know many persons that are putting in single engines where the double would have answered a much better purpose.

The trouble in the minds of many seems to be the increase of surface for friction in the cylinders of the double engine. They forget to take into consideration the fact that the loss is entirely made up by the quicker motion of the engine, or, in other words, less gearing is required to get up the necessary speed. It is true that the driving or crank shaft of the double engine runs with double the velocity of the single; but as its diameter need be only about one half of the other, the velocity of the bearings are equal, consequently the friction is the same in each—neither having a fly wheel attached—without which the single engine is worthless. To attach the fly wheel, the shaft must be greatly increased in size; then comes the enormous weight of the fly wheel, producing an increase of friction, which, with the force required to drive the fly wheel through the atmosphere, takes off eight or ten per cent. of the power.

Now, if the above reasoning is correct, it is certainly folly to pay the extra expense of shipping fly wheels, or getting the extra gearing to produce the required speed; and yet almost all the flouring mills west of the Mississippi have single engines, and, I may add, back lash in abundance. Spring couplings do not entirely prevent back lash, and are liable to get out of order, therefore they "don't pay."

JAS. H. JONES.

Muscatine, Iowa, Oct. 1855.

MESSRS. EDITORS—I have a mill in Reading, Mich., which is driven by a single engine. It runs as steady as a water wheel. The cylinder is 10 inches in diameter and 20 in stroke; fly wheel 6 feet; weight, 800 lbs.; it runs two pair of burrs with 80 lbs. of steam; averages 10 bushels per hour. We run the engine 150 revolutions per minute. I should like to have opinions from mechanics on the relative per centage of driving heavy machinery by belts and cogs; my opinion is, that it takes about 30 per cent. more power by belts than by cogs.

L. HATFIELD.

Cuyahoga Falls, Ohio, Oct. 1855.

Influence of Bismuth upon the Ductility of Copper.

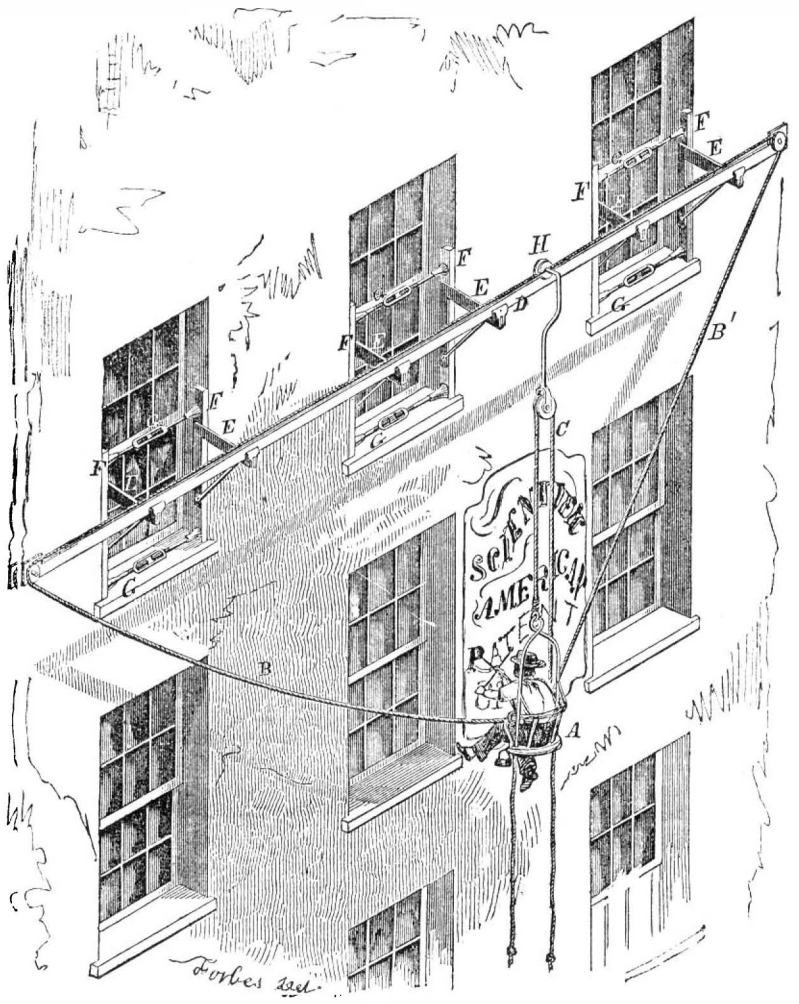
M. Levol has shown that bismuth, even in very small quantities, exerts a very injurious action upon the ductility of copper. An alloy of pure copper with 1-100th of its weight of bismuth had a crystallline texture, and a well marked gray tint, and was torn under the hammer. A second alloy, formed of pure copper, in the state of very fine wire, with 1-1000th of bismuth, hud also a crystaline texture, and had but a very slight ductility. He was led to make these experiments by the analysis of some specimens of black copper from Australia, which presented unusual difficulties in the process of refining, and which he discovered contained 0.144 per cent. of bismuth, and even when refined still contained 0.048 per cent. and was a very inferior quality. He directs attention to these results, as pointing out the necessity of looking for traces of bismuth in the copper of commerce, and thus avoiding many disagreeable results which have frequently ensued from the employment of certain coppers, and which, he appears to think, are attributable in many instances to the presence of trace of bismuth.—[Bulletin de la Societe d' Encouragement.

Suspension Scaffolding.

MESSRS. EDITORS—All have noticed the very imperfect contrivance used by builders when some repairs are made on the front of a house. A piece of timber is fixed on the top, or out of the upper windows, and ropes are attached to them, supporting a plank on which the workmen stand to do the work.

I here present a very simple way of doing the same, which is no doubt more expensive, but answers the purpose in the most complete manner. I do not give it as mine, but as a recollection of something I have seen used. I remember only the principle, and have arranged the details as I thought the most convenient.

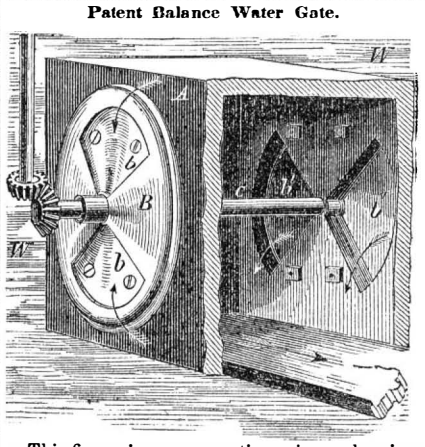
The figure represents the front of a house to be repaired, or printed, or lettered, &c. The apparatus consists in a piece of hard wood, on which is fixed a bracket of iron, E E, projecting about 2 feet outside, and having at its end a cast iron socket. The upper part of this piece of hard wood is forked, so as to admit a vertical rail, F F, on each side secured by



screws, G G, two of such for each window.—They are placed against the brick work, flush with the face of the wall, and kept in place by means of the screws, G G, they are then firmly secured. A long rail, D, is then fixed in the brackets, and the seat, A, hung by its pulley, H, which is capable of riding along the rail, D, from one end to the other. At each end of the rail, D, is a pulley; a rope, B B', connected with the seat, A, and pulley, H, passes over each of those end pulleys. When the workman wants to transport himself to the right, he slacks the left rope and pulls on the right rope—when he wants to transport himself to the left he slacks the right rope and pulls on the left one. When all is done in that horizontal line, he pulls himself up or lowers himself down by the rope passing over the hanging pulley, C, and he can in this way survey the whole face of the house. A strap in front of the seat keeps him safe, and he has both hands at liberty, and he can use his feet against the wall to keep from swinging. He has, therefore, no call for any help except to hand him materials or tools. The rail, D, has a projection at each end, so as to prevent the traveling pulley of the suspended seat being drawn over. This apparatus is simple, portable, and easily operated, and apparently a superior plan to that of using tall ladders for the purpose of painting the fronts of houses.

E. BONNET, Architect, No. 1 Center st., N.Y.

Patent Balance Water Gate.



This figure is a perspective view, showing the inside, of an improved balance water gate, for which a patent was obtained by E. N. Moore and J. H. Hanyan, of Lenoxville, Pa., on the 24th of July last.

The nature of the invention consists in placing two gates on a shaft, to close, and expose openings in the sides of a box, and permitting the water to enter the box through the two gates, in opposite directions, whereby the pressure of water on one gate is neutralized by its pressure on the other, thus forming a balance gate.

A represents a covered box with one outlet open side. It is placed in a flume or pond, and is surrounded on all sides except the outlet by water, W W. B is an annular seat on one end of the box; there is a similar one on the other side on the other end. C is the gate shaft; it passes through the center of the annular seats, B. *b b* are the valves or water gates. They are secured by collars on the shaft, C. On the opposite end of the shaft outside, there are two similar gates secured to the shaft, C. These gates are fitted snug to work water tight in their circular seats, B. Section openings or slits, *b' b'*, are cut in the sides of the box, and the gates cover them. These slits or openings are the water passages. When the gates close them, no water enters the box, A; when the gates expose these openings or slits, the water rushes into the box through them in opposite directions, as shown by the arrows, and then out at the near side. This action of the water balances the pressure on the gates. It will be observed that the pressure of the water on the gates on the shaft, C, is equal but exerted in opposite directions, and thus the one gate acts as a counterpoise to the other. The shaft, C, of the gates can therefore be operated with ease, and the gates are opened and closed with the exercise of but little power. The form of the gates and their seats may be different from those represented, but circular disks with sector recesses, as shown, are perhaps the best. This balance water gate is very sensitive to the action of a governor, and is therefore well adapted for regulating the flow of water through the penstock, according to the work to be done.

A model is on exhibibition at the Fair of the American Institute in the Crystal Palace and more information respecting it may be obtained by letter addressed to E. N. Moore, or Wm. Barber, Lenoxville, Pa.

A New Machine Wanted.

A correspondent from Montgomery, Ala. states, in his letter, that a machine for cutting corn shucks into shreds would find a ready sale in that section of the country. Corn shucks split into shreds find a ready sale at 2 1-2 and 3 cents per pound, for the purpose of mattrass making, and when so cut are also much better for mules, horses, and cattle, as food, than when cut cross wise, by common stalk cutters. "On most plantations at the South," the letter says, "a simple machine to be operated by the hand, and would do its work well, would find a ready sale."

These shucks are split by hand at present, by pulling them over a number of nails or sharp spikes driven into a board. The work is slow and tedious, but it affords profitable employment for many aged and infirm hands who are incapable of out-door labor.

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